

**US DEPARTMENT OF THE INTERIOR,
BUREAU OF LAND MANAGEMENT**

**US DEPARTMENT OF AGRICULTURE,
FOREST SERVICE**

**PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR
GEOTHERMAL LEASING IN THE WESTERN UNITED STATES**

SCOPING REPORT

DECEMBER 2007

SUBMITTED BY:

ENVIRONMENTAL MANAGEMENT AND PLANNING SOLUTIONS, INC.



IN ASSOCIATION WITH TETRA TECH, INC.

This page intentionally left blank

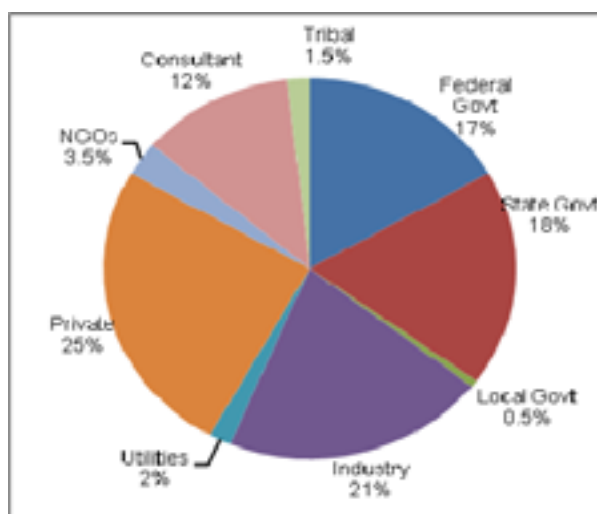
EXECUTIVE SUMMARY

The Notice of Intent (NOI) to prepare the Geothermal Leasing Programmatic Environmental Impact Statement (PEIS) was published on June 13, 2007. The NOI kicked off the 60-day public scoping process which concluded on August 13, 2007. The project area encompasses Bureau of Land Management (BLM) and Forest Service (FS) lands in 12 states and public scoping meetings were held in 10 cities across the west during the month of July, 2007 (Figure 1). Attendance was dominated by private individuals, geothermal and energy industry representatives, and State and Federal government agency staff. Figure 2 provides a profile summary of the meeting attendees.

Figure ES-1
Scoping Meeting Locations and Attendance

State	Location	Attendance
AK	Anchorage	10
AZ	Phoenix	14
CA	Sacramento	29
CO	Denver	21
ID	Boise	22
MT	Missoula	4
NV	Reno	25
NM	Santa Fe	5
OR	Portland	31
UT	Salt Lake City	13
TOTAL		174

Figure ES-2
Profile of Scoping Meeting Attendees



The scoping meetings were advertised through the following means:

- Newspaper notices
- The project website
- A project newsletter (~1,600 recipients)
- E-mail messages
- Newspaper articles
- Industry publications.

The comments received and evaluated during the scoping period will be considered in formulation of the alternatives and initial impact evaluations. One hundred and one (101) verbal comments were cataloged by the project team. A total of 79 comment submittals were received in the form of comment cards and letters received by US Mail, electronic mail, and facsimile. The following agencies, organizations, and industries provided comments, as well as private individuals.

- California Wilderness Coalition
- Calpine Corporation
- Earth Systems Southwest
- Greater Yellowstone Coalition
- Idaho Conservation League
- New Mexico Department of Fish and Game
- Ormat Inc.
- Save Medicine Lake Coalition
- Sierra Club, Oregon Chapter
- Skamania County Public Utility District No. 1
- Utah Environmental Congress
- Utah Office of the Governor, Utah Geological Survey
- United States Environmental Protection Agency
- Western Resource Advocates
- The Wilderness Society and Western Resource Advocates
- Wyoming Game and Fish Department
- Wyoming Outdoor Council

COMMENT SUMMARY

Comments were related to the National Environmental Policy Act (NEPA) process, purpose and need, the impact analysis, alternatives, and project coordination. Some comments addressed issues pertinent to geothermal development, but were outside of the scope of the PEIS. A summary table of the comments is provided below.

Comments Related to the NEPA Process
<ul style="list-style-type: none"> The BLM and FS should ensure the PEIS conforms to all requirements of NEPA
<ul style="list-style-type: none"> The document should adequately address the cumulative impacts of proposed and future geothermal projects, as well as the need for associated infrastructure such as transmission lines and roads.
<ul style="list-style-type: none"> How will the document be used as tiering document for subsequent, area-specific and site-specific environmental analysis?
Comments on the Purpose and Need
<ul style="list-style-type: none"> The document should address how the project will satisfy the requirements of policy and regulations such as the Energy Policy Act of 2005.
<ul style="list-style-type: none"> The PEIS should clarify the geographic scope of the project, including the process used to designate potential lease areas and areas that will be excluded from leasing analysis.
<ul style="list-style-type: none"> The PEIS should clearly define the extent to which the PEIS will cover tribal lands.
<ul style="list-style-type: none"> How will the PEIS address individual backlogged leases?
<ul style="list-style-type: none"> How will the PEIS define and address future technologies?
<ul style="list-style-type: none"> Specific areas were identified as potential lease areas or areas that should be excluded.
Comments on Impact Analysis
<ul style="list-style-type: none"> The PEIS should analyze all potential impacts related to geothermal exploration and development. The most common concerns were effects to wildlife, wildlife habitat, groundwater, and visual impacts.
Comments on Alternatives
<ul style="list-style-type: none"> Alternatives should include the exclusion of sensitive areas, such as special designated lands, including Areas of Critical Environmental Concern, wilderness areas, and wild and scenic rivers.
<ul style="list-style-type: none"> Lands surrounding Yellowstone National Park should be excluded.
<ul style="list-style-type: none"> Leasing should only be allowed near existing infrastructure and transmission lines.
Comments on Coordination and Consultation
<ul style="list-style-type: none"> Appropriate federal and state agencies should be included and consulted throughout the geothermal PEIS process.
<ul style="list-style-type: none"> How will the PEIS identify areas of high potential without divulging valuable proprietary information of potential developers who have already identified resources within the areas?
<ul style="list-style-type: none"> Tribal governments should be involved throughout the process.
<ul style="list-style-type: none"> The scoping period should be extended and additional scoping meeting locations should be added to allow full scoping opportunities.
Comments Outside the Scope of the PEIS
<ul style="list-style-type: none"> The PEIS should be a joint NEPA/CEQA (California Environmental Quality Act) document and should identify the CEQA lead agency.
<ul style="list-style-type: none"> The document should assess impacts from development on Tribal lands.
<ul style="list-style-type: none"> The document should include provisions that detail the necessary enforcement to ensure that reclamation is effectively completed after exploration activities. Agencies should also be obliged to research and disclose the environmental and legal track record of potential geothermal leaseholders.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES- I
-------------------------	-------

1.0 INTRODUCTION	I
------------------------	---

1.1	GOALS OF THE PROGRAMMATIC EIS	1
1.2	OVERVIEW OF THE SCOPING PROCESS AND SCOPING REPORT	1
1.3	COOPERATING AGENCIES AND COORDINATION WITH STAKEHOLDERS	2
1.4	CONSULTATION AND COORDINATION WITH TRIBES	2
1.5	SCOPING ACTIVITIES CONDUCTED	2
1.5.1	Notice of Intent in the Federal Register	3
1.5.2	Project Website	3
1.5.3	Notice of Intent in Newspapers	4
1.5.4	Project Newsletter #1	5
1.5.5	Media Outreach.....	5
1.5.6	Passive Outreach to Stakeholder-Focused Media	5
1.5.7	Scoping Meetings	6

2.0 SCOPING RESULTS	9
---------------------------	---

2.1	ATTENDANCE AT SCOPING MEETINGS.....	9
2.2	COMMENT TRACKING	10
2.2.1	Verbal Comments	10
2.2.2	Written Comments	11

3.0 COMMENT SUMMARY	13
---------------------------	----

3.1	SUMMARY	13
-----	---------------	----

4.0 FUTURE STEPS	15
------------------------	----

4.1	SUMMARY OF FUTURE STEPS AND PUBLIC PARTICIPATION OPPORTUNITIES	15
4.2	CONTACT INFORMATION.....	15

LIST OF TABLES

Table 1: Scoping Meeting Dates, Locations and Core Staff Present.....	7
Table 2 : Materials Used at Scoping Meetings	8
Table 3: Attendance at Scoping Meetings	9

LIST OF FIGURES

Figure ES-1: Scoping Meeting Locations and Attendance.....	ES- I
Figure ES-2: Profile of Scoping Meeting Attendees.....	ES- I
Figure 1: Screenshot of Project Website Homepage	4
Figure 2: Scoping Meeting Attendees	10

APPENDICES

A	Notice of Intent, as Published in the Federal Register.....	AI
B	Sample Display Ad from Anchorage Daily News.....	BI
C	Newsletter #1 – Hard Copy.....	CI
D	Materials Used at Scoping Meetings.....	DI
E	List of Commentors.....	EI
F	Written Comments Summary Detail.....	FI

LIST OF ACRONYMS

BIA	BUREAU OF INDIAN AFFAIRS
BLM	BUREAU OF LAND MANAGEMENT
CEQA	CALIFORNIA ENVIRONMENTAL QUALITY ACT
DOE	DEPARTMENT OF ENERGY
EIS	ENVIRONMENTAL IMPACT STATEMENT
EIR	ENVIRONMENTAL IMPACT REPORT
EMPS	ENVIRONMENTAL MANAGEMENT AND PLANNING SOLUTIONS, INC.
EPA	ENVIRONMENTAL PROTECTION AGENCY
FS	FOREST SERVICE
GIS	GEOGRAPHICAL INFORMATION SYSTEM
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NLCS	NATIONAL LANDSCAPE CONSERVATION SYSTEM
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOI	NOTICE OF INTENT
NPS	NATIONAL PARK SERVICE
NWR	NATIONAL WILDLIFE REFUGE
PEIS	PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
USFWS	US FISH AND WILDLIFE SERVICE
WSA	WILDERNESS STUDY AREA

PEIS SCOPING CORE TEAM MEMBERS

Team Member & Role	Organization & Address	Phone & Email
Jack Peterson BLM Project Manager	Bureau of Land Management Idaho State Office 1387 S. Vinnell Way Boise, ID 83719-1657	208.373.4048 jack_g_peterson@blm.gov
Tracy Parker FS Project Manager	US Forest Service 1601 N. Kent Street, 5 th Floor Arlington, VA 22209	703.605.4796 tparker03@fs.fed.us
Jerry Cordova BLM National Tribal Coordinator	Bureau of Land Management 1849 C Street, N.W., Rm. 204-LS Washington, DC 20240	(202)452-7756 jerry_cordova@blm.gov
Joe Moore DOE Representative	Energy and Geoscience Institute at the University of Utah 423 Wakara Way Suite 300 Salt Lake City, Utah 84105	801.585.6931 jmoore@egi.utah.edu
David Batts NEPA Project Manager	EMPS, Inc. 4730 Walnut Street, Ste 108 Boulder, CO 80301	303.447.7160 david.batts@empsi.com
John King Principal-in-Charge	EMPS, Inc. 944 Market Street, Ste 509 San Francisco, CA 94102	415.544.0440 john.king@empsi.com
Holly Prohaska NEPA Deputy Project Manager	Tetra Tech, Inc. 180 Howard Street, Ste 250 San Francisco, CA 94105	415.974.1221 holly.prohaska@tetrattech.com
Andrew Gentile NEPA Public Participation Coordinator	EMPS, Inc. 944 Market Street, Ste 509 San Francisco, CA 94102	415.544.0440 andrew.gentile@empsi.com

I.0 INTRODUCTION

In accordance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321), the Bureau of Land Management (BLM) and the U.S. Forest Service (FS) are preparing a joint Programmatic Environmental Impact Statement (PEIS) for geothermal leasing on BLM- and FS-administered lands in the western United States (including Alaska) with high-to-moderate potential for geothermal resources. As required under NEPA, the BLM and FS conducted public outreach (scoping) activities for the PEIS from June 13 through August 13, 2007. This report summarizes the scoping activities conducted, and the results of those outreach efforts.

I.1 GOALS OF THE PROGRAMMATIC EIS

The first goal of the PEIS is to provide information on the environmental impacts related to geothermal development on BLM-administered lands in the Western US that have reasonable near-term exploration/development potential for geothermal energy to aid the BLM in determining which of those lands are appropriate for geothermal leasing, and to revise applicable land use plans accordingly. The PEIS would also evaluate impacts on FS-administered lands in the Western US and Alaska to help individual Forest District managers to make decisions about similar revisions of their Forest Plans. The programmatic nature of the document would cover the amendment of multiple land use plans, which would otherwise require separate NEPA documentation.

The second goal of the PEIS is to provide information on the environmental impacts related to geothermal development on specific plots of land covered by pending lease applications that were unprocessed as of January 1, 2005 and are required to be processed by August 8, 2010, per the Energy Act of 2005. The programmatic nature of the document would allow decisions on multiple lease applications, which would otherwise require separate NEPA documentation.

The project area encompasses BLM and FS lands in the following 12 states:

- Alaska
- Arizona
- California
- Colorado
- Idaho
- Montana
- Nevada
- New Mexico
- Oregon
- Utah
- Washington
- Wyoming

Comments were solicited to help identify areas of high geothermal resource potential, to determine the scope of issues related to the proposed action, and to identify and refine alternatives to the proposed action.

I.2 OVERVIEW OF THE SCOPING PROCESS AND SCOPING REPORT

Public involvement is being conducted in two phases over the course of the PEIS process: (1) public scoping prior to NEPA analysis, and (2) public review and comment on the Draft PEIS. This Scoping Report covers the first of these two stages of public involvement, herein referred to as *scoping*.

Scoping is a public process designed to help the public agency with the responsibility for carrying out or approving a project, referred to as the “lead agency”, to determine the scope of issues and alternatives to be addressed in the PEIS. The public scoping period began on June 13, 2007 with the publication of the Notice of Intent (NOI) in the Federal Register and continued through August 13, 2007. A project

website was launched prior to the beginning of the scoping period, and was maintained and expanded throughout scoping. Soon after the scoping period began, project newsletters were sent out to the project mailing list of approximately 1,600 individuals. Public scoping meetings, hosted by the BLM and FS, were held throughout July 2007 in 10 cities across the Western US, including Alaska. These meetings provided opportunity for members of the public, local government, tribes, utilities and other interest groups to learn about the PEIS, to provide input into the development of the PEIS, and to voice their concerns related to potential environmental impacts so that they may be addressed in the PEIS.

This report documents the results of the public scoping phase of this project, and will be used by the BLM and FS to identify the key issues, data, and other information provided by the public, in developing the draft PEIS.

I.3 COOPERATING AGENCIES AND COORDINATION WITH STAKEHOLDERS

The US Department of Energy is serving as a cooperating agency with representation on the project core team via a contract with the University of Utah. The US Geological Survey is also working closely with the core team to provide technical guidance in defining areas of geothermal development potential. Ongoing coordination is being conducted with the US Fish and Wildlife Service (USFWS), the Environmental Protection Agency, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the Bureau of Indian Affairs.

State government coordination and collaboration are important to the project's success. Dialogues have been initiated with key state agencies involved in the promotion, analysis, and permitting of geothermal development projects including state geological surveys, state energy offices, and state energy regulatory bodies.

Coordination with other stakeholders groups, including business and geothermal industry groups is also ongoing. Additional stakeholder outreach is being conducted through the attendance of core team members at energy and industry conferences throughout the duration of the project.

I.4 CONSULTATION AND COORDINATION WITH TRIBES

BLM and FS are consulting with American Indian Tribes in accordance with Section 106 of the National Historic Preservation Act. Over 400 letters were mailed to representatives of tribes and pueblos in the western United States and Alaska inviting them to participate in the consultation process. The consultation process will be ongoing throughout the project.

I.5 SCOPING ACTIVITIES CONDUCTED

Efforts were undertaken to inform and involve target audiences during the scoping period that began on June 13, 2007 and ended on August 13, 2007. Scoping activities conducted included the following:

- Notice of Intent in Federal Register
- Notice of Intent in newspapers
- Project newsletter #1
- Media outreach
- Passive stakeholder media outreach
- Scoping meetings

Scoping efforts were designed to communicate project details to, and solicit input from various stakeholders in the PEIS process. Stakeholder groups targeted for involvement in the PEIS scoping process included, but were not limited to, the following:

- Interested local, state, and federal officials and agencies, including counties and municipalities within the planning area, state departments of wildlife, state geologists, state historic preservation offices, state water departments, state departments of environmental quality, the FS, the US Fish and Wildlife Service, the US Geological Survey, and the US Bureau of Reclamation;
- Tribal governments;
- Special interest groups, environmental/conservation groups;
- Geothermal/energy industry representatives;
- Utilities representatives;
- Elected representatives; and
- The general public.

1.5.1 Notice of Intent in the Federal Register

As defined under NEPA, the scoping period began with the publication of the Notice of Intent (NOI) in the Federal Register on June 13, 2007. The NOI published was entitled “*Notice of Intent to Prepare a Programmatic Environmental Impact Statement for Leasing of Geothermal Resources*” and acknowledged that the PEIS was going to be a joint effort of the BLM and the FS. The NOI:

- Noted that the scoping period would continue through August 13, 2007;
- Listed the 10 cities in which scoping meetings would be held;
- Indicated that the scoping meetings would be announced at least 15 days in advance in local media;
- Provided the project website and National Project Manager contact information;
- Provided information on how to submit comments;
- Provided a summary of the information to be included on the project website;
- Provided a list of land types that would not be included in the PEIS;
- Provided a brief overview of geothermal energy uses, changing market forces, increased demand for renewable energy, and the Federal and state actions that spurred the PEIS project;
- Stated the goal of the PEIS and the purposes the PEIS would serve; and
- Stated the purpose of the public scoping process.

A copy of the NOI is included in Appendix A.

1.5.2 Project Website

The project website (www.blm.gov/geothermal_eis) was established prior to publication of the NOI in the Federal Register. A screenshot of the project website homepage is included as Figure 1. The project website contained the following information and continued to be developed throughout the scoping period:

- Objectives of the proposed project;

- Project schedule;
- A link to the Notice of Intent from the Federal Register;
- A link to the Press Release issued by the BLM immediately following the publishing of the NOI;
- Details of the public scoping meetings and instructions on how stakeholders can get and stay involved throughout the project timeline;
- Scoping meeting presentation materials and comment cards;
- Links to information sources on geothermal energy, electrical generation, and laws and regulations applicable to the project;
- A link to the BLM Geothermal Regulations, published in the Federal Register on May 2, 2007;
- Project newsletter #1;
- Frequently Asked Questions; and
- Contact information for the BLM, FS and EMPS.

Figure 1
Screenshot of Project Website Homepage



1.5.3 Notice of Intent in Newspapers

Notices of Intent to Prepare a PEIS were published as display ads in the major newspapers of the 10 cities in which scoping meetings were held, at least 15 days prior to the scoping meeting in the respective city. The notices were run in the following newspapers:

- The Albuquerque Journal
- The Alaska Star

- The Anchorage Daily News
- The Arizona Republic
- The Denver Post
- The Idaho Statesman
- The Missoulaian
- The Oregonian
- The Reno Gazette
- Sacramento Bee
- The Salt Lake City Tribune

The notices briefly described the launch of the project, the 12 states being covered by the PEIS, the project website, and the date, time and location of the local scoping meeting. A copy of one of the display ads is included in Appendix B.

1.5.4 Project Newsletter #1

In coordination with BLM and FS, EMPS prepared the first project newsletter that included with information on geothermal energy, the PEIS, the location and dates of the ten scoping meetings, contact information and information on how to provide scoping comments. Electronic and paper newsletters were emailed and mailed, respectively, to the approximately 1,600 individuals on the project mailing list and posted on the web site in the June 26 to July 6, 2007 timeframe.

The paper newsletter was four pages long, with each page being 8.5 inches by 11 inches, and was sent by EMPS to all addressees on the mailing list who had physical mailing addresses. Of 1,589 total paper newsletters mailed out, 582 of which were to tribes and 1,007 of which were to other stakeholders, 27 were returned to EMPS due to invalid or outdated mailing addresses or recipient names. These addresses will be deleted from the project mailing list for future mailings. A copy of the newsletter is included in Appendix C.

An electronic version of the newsletter was also prepared and emailed out to all addressees on the project mailing list who had email addresses. Of 1,124 electronic newsletters distributed, email bouncebacks were returned from the internet service providers for 106 recipients due to incomplete, incorrect or outdated email addresses. These email addresses will be deleted from the project mailing list for future electronic mailings. A copy of the electronic newsletter is available on the project website at www.blm.gov/geothermal_eis.

1.5.5 Media Outreach

Prior to the scoping meetings, EMPS identified science writers at 25 major newspapers across the Western US, emailed press kits to them and invited them to write an article about the PEIS. Newspaper articles announcing the scoping meetings and providing information about the PEIS were published in The Ely Times (June 20, 2007), the Rocky Mountain News (Jun 28, 2007), the Boise Weekly (July 4, 2007), and on the Colorado Governor Energy Office Calendar of Events. Additionally, the Casper Star-Tribune published an article on August 14, 2007, after scoping meetings were complete.

1.5.6 Passive Outreach to Stakeholder-Focused Media

Information on the project, the scoping period and the meetings were also picked up by various industry, technical, utility, business, environmental and tribal groups across the US. Articles on the project were posted on the websites of, and/or published in newsletters by, the following organizations:

- Geothermal Energy Association (www.geo-energy.org)
- Geothermal Resources Council (www.geothermal.org)
- Department of Energy, Energy Efficiency and Renewable Energy (www1.eere.energy.gov)
- The Wilderness Society (www.wilderness.org)

- Native American Fish and Wildlife Society (www.nafws.org)
- FS Research & Development, Center for Bottomland Hardwoods Research (www.srs.fs.usda.gov/cbhr/)
- CherokeeForestVoices.org
- Arizona Geological Survey (www.azgs.az.gov)
- Texas State Energy Conservation Office (www.seco.cpa.state.tx.us)
- ForestNewsWatch.com
- ColumbiaBasinEnergyReport.com
- EnergyCentral.com
- EnergyVortex.com
- PetroleumNews.com
- Facilitiesnet.com
- Zibb.com
- Southern Forestry Consultants, Inc. (www.soforest.com)
- Nevada's Center for Entrepreneurship and Technology (www.ncet.org)

1.5.7 Scoping Meetings

Public scoping meetings were held in 10 cities across the western US and Alaska, as detailed in Table 1. The scoping meetings were advertised through the following means:

- Newspaper notices placed in the major newspaper of each scoping meeting city;
- The project website;
- A project newsletter sent to the project mailing list (approximately 1,600 recipients);
- E-mail messages;
- Newspaper articles; and
- Geothermal, energy and utility publications.

The meetings followed an open house format beginning at 4:30 pm and ending at 7:30 pm. Various informational materials were distributed throughout the room and BLM, FS and contractor staff were available to answer questions. The informational materials were comprised of poster boards, a PowerPoint presentation, two DVDs and various geothermal and project handouts. The materials are detailed in Table 2 and included in Appendix D. A formal presentation was also provided at each of the meetings. The presentation briefly explained geothermal energy, the NEPA process, the proposed action, the purpose of the scoping meetings and ways for the public to provide input. The presentation was followed by a question and answer period.

Attendees were encouraged to submit written comments so that their concerns could be accurately conveyed and formally addressed in the planning document, but verbal comments were also taken and noted. Comment cards were available at the meetings for attendees to fill out and either submit at the meeting, or to mail in later.

Table 1
Scoping Meeting Dates, Locations and Core Staff Present

Location	July 2007 Date	Core Team Staff	Other Agency and Contractor Staff
PPA Event Center (Evergreen A Room) 2105 Decatur Street Denver, CO 80211	Mon 9	Jack Peterson, BLM Tracy Parker, FS David Batts, EMPS Holly Prohaska, Tetra Tech	Jody Erikson, Keystone Kermit Witherbee, BLM Jennifer Zakrowski, Tetra Tech
Boise Public Library 715 S. Capitol Blvd. Boise, ID 83702	Tue 10	Jack Peterson, BLM Tracy Parker, FS Joe Moore, DOE Holly Prohaska, Tetra Tech Andrew Gentile, EMPS	Tim Abing, FS Kermit Witherbee, BLM
Burton Barr Central Library (Lecture Room) 1221 N. Central Avenue Phoenix, AZ 85004	Wed 11	Jack Peterson, BLM Joe Moore, DOE Andrew Gentile, EMPS Kevin Doyle, Tetra Tech	Eric Olson, FS
Main Building (Jemez Room 1) Santa Fe Community College 6401 Richards Avenue Santa Fe, NM 87508	Thu 12	Jack Peterson, BLM Joe Moore, DOE David Batts, EMPS Kevin Doyle, Tetra Tech	Eric Olson, FS
Main Library 210 East 400 South Salt Lake City, UT 84111	Mon 16	Jack Peterson, BLM Joe Moore, DOE David Batts, EMPS	Tim Abing, FS Jennifer Zakrowski, Tetra Tech
Jot Travis Student Union (Manzanita Room) University of Nevada, Reno N. Virginia Street Reno, NV 89511	Tue 17	Jack Peterson, BLM Jerry Cordova, BLM Joe Moore, DOE David Batts, EMPS Holly Prohaska, Tetra Tech John King, EMPS	Bob Fujimoto, FS Rich Teixeira, FS
California Energy Commission (Hearing Room A) 1516 Ninth Street Sacramento, CA 95814	Wed 18	Jack Peterson, BLM Jerry Cordova, BLM Joe Moore, DOE Holly Prohaska, Tetra Tech John King, EMPS Andrew Gentile, EMPS	Rich Teixeira, FS
Hotel Monaco (Lipman Wolfe B Room) 506 SW Washington Street Portland, OR 97204	Mon 23	Jack Peterson, BLM Jerry Cordova, BLM Joe Moore, DOE Holly Prohaska, Tetra Tech John King, EMPS	Bob Fujimoto, FS Derek Holmgren, Tetra Tech
Alaska Energy Authority 813 W Northern Lights Boulevard Anchorage, AK 99503	Wed 25	Jack Peterson, BLM Jerry Cordova, BLM Joe Moore, DOE David Batts, EMPS Andrew Gentile, EMPS	
Doubletree Hotel (Bitterroot Room) 100 Madison Missoula, MT 59802	Mon 30	Jack Peterson, BLM Joe Moore, DOE David Batts, EMPS Andrew Gentile, EMPS	Leslie Vaculik, FS

Table 2
Materials Used at Scoping Meetings

Poster Boards	Maps	Handouts	DVDs and PowerPoint Presentations
What are geothermal resources? (Geothermal Education Office)	Geothermal Map of North America (Southern Methodist University)	Preliminary list of pending lease applications (EMPS/BLM)	PowerPoint Presentation: Geothermal Energy (Geothermal Education Office)
Geothermal Energy Uses (Geothermal Education Office)	Geothermal Resources – State-specific (National Oceanic and Atmospheric Administration)	Project Newsletter #1	DVD: Virtual Tour of a Geothermal Power Plant (CalEnergy)
Heatflow Map of the U.S. (Southern Methodist University)	Geothermal Resources – State-specific (Idaho National Laboratory)	NOI	DVD: Geothermal Energy – A Renewable Option (Geothermal Education Office)
Direct Use vs. Indirect Use (Geothermal Education Office)	Earth from Space – infrared satellite imagery – regional (Bureau of Reclamation/ BLM/FS)	Project News Release	
Federal Lands and Indian Reservations Nationwide (Nationalatlas.gov)		Geothermal PEIS: Qs and As (BLM)	
Posterboard: Federal Lands and Indian Reservations (State-specific, Nationalatlas.gov)		Geothermal Frequently Asked Questions (Department of Energy)	
The NEPA Process (EMPS, Inc.)		Comment Form (to be handed in at scoping meeting)	
Electrical transmission line network (current)		Comment Form (to be mailed in after scoping meeting)	
Electrical transmission line network (projected for 2016)			

2.0 SCOPING RESULTS

2.1 ATTENDANCE AT SCOPING MEETINGS

Total attendance across the ten scoping meetings was 174 people, not including core team. Individual meetings attracted varying numbers of people, from four in Missoula to 31 in Portland. Attendance was dominated by private individuals, geothermal and energy industry representatives, and State and Federal government agency staff. Other attendees included consultants, utilities representatives, tribal representatives, renewable energy proponents, and conservation groups. Private individuals in attendance included potential developers of small, local projects, students, and other interested and/or concerned individuals. State agencies attending the meetings varied by state, as did jurisdictional responsibilities involved with the promotion and permitting of geothermal projects, but included departments of fish and game, natural resources, environmental quality and water quality, state geological surveys and state energy bodies. Table 3 and Figure 2 provide summaries of scoping meeting attendees.

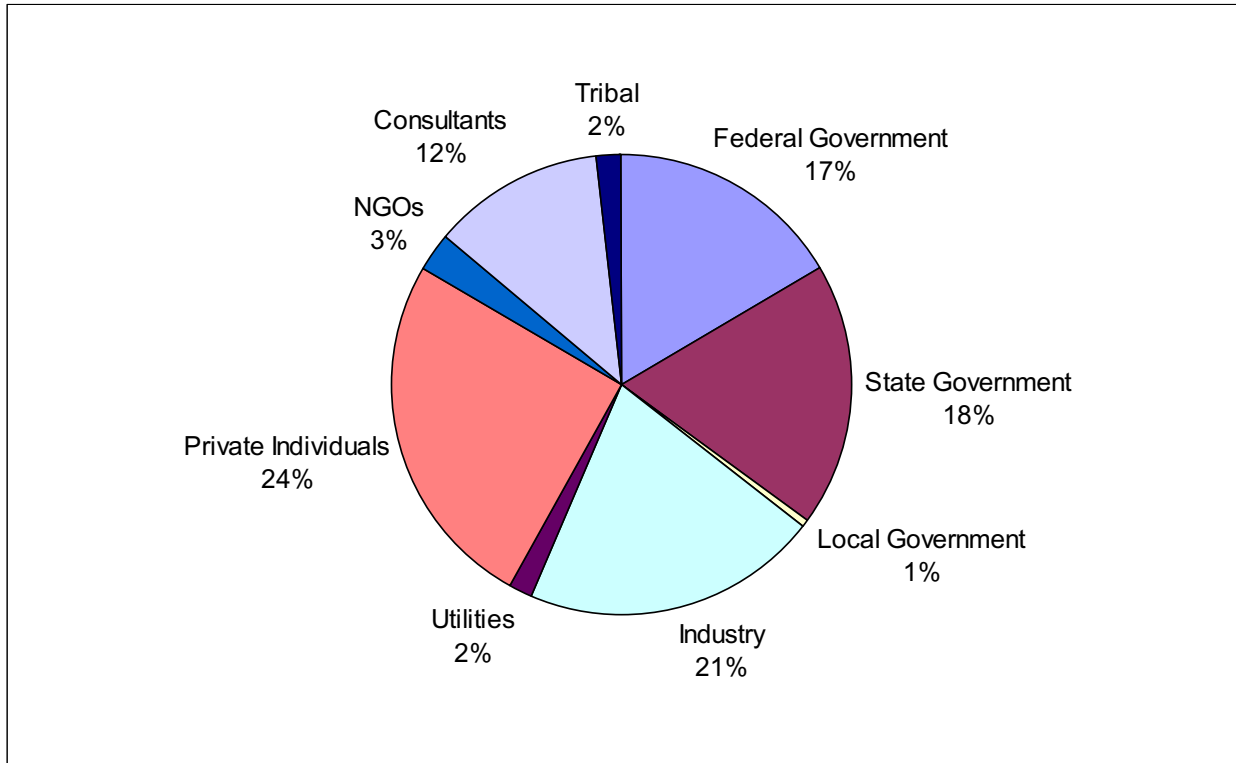
Table 3
Attendance at Scoping Meetings

Location	FG	SG	LG	IN	UT	PI	NG	CN	TR	TOTAL
Anchorage	1	4		1		2	1	1		10
Boise	7	0		3		8	2	2		22
Denver	7	2		6	1	4		1		21
Missoula	1	1		1		1				4
Phoenix		2		2	2	3		4	1	14
Portland	2	2		5		17	2	3		31
Reno	3	3		11		4		2	2	25
Sacramento	3	13	1	5		1		6		29
Salt Lake City	4	3		1		3		2		13
Santa Fe	1	2		1		1				5
Total	29	32	1	36	3	44	5	21	3	174

FG = Federal Government
SG = State Government
LG = Local Government
IN = Industry
UT = Utilities

PI = Private Individual
NG = Non-Governmental Organization
CN = Consultant
TR = Tribal Member

Figure 2
Scoping Meeting Attendees



2.2 COMMENT TRACKING

Comments were collected during the project scoping period, which stretched from June 13 to August 13, 2007. Comments were collected verbally at the scoping meetings, as well as in writing through comment forms, letters, and electronic mail. All written scoping comments received through August 24, 2007 were evaluated and documented in this Scoping Report, although only one written submission was received after August 13, 2007. The BLM and FS will continue to accept comments throughout the NEPA process. The comments received and evaluated in this Scoping Report will be considered in formulation of the alternatives and initial impact evaluations.

2.2.1 Verbal Comments

One hundred and one (101) verbal comments were cataloged with written notes by the project team at the ten scoping meetings. Nearly all of the comments were expressed in the form of questions. The 101 questions and comments generally related to the following topics:

- Purposes and uses of the PEIS;
 - How the PEIS would affect BLM land use plans and FS forest plans;
 - How the PEIS would be used as a tiering document for subsequent, area-specific and site-specific environmental analyses;
- Geographic areas to be analyzed by the PEIS;
- Tribal issues
 - Whether the PEIS would cover tribal lands;

- The involvement of the Bureau of Indian Affairs in the PEIS;
- The status of tribal consultation for the PEIS;
- Analytical methods used in the PEIS;
- Information sources for the PEIS;
- Address state-specific regulatory environments;
- Define areas of “moderate to high potential” and the necessity to have different definitions in different states/locations due to variations in economical viability and technical feasibility;
- Identify specific areas as off-limits for development;
- Address areas that are not currently known as having moderate to high potential;
- Present the analyses of the individual lease applications;
- Acknowledge beneficial effects on greenhouse gas emissions and climate change of developing renewable geothermal energy, versus the No Action Alternative;
- Affect of the geothermal leasing and development process on public lands;
- Identify areas of high potential for geothermal development while at the same time protecting proprietary information of prospective developers who may have identified those lands;
- The need for subsequent NEPA analysis for exploration and development;
- The appeal process once the Record of Decision is signed;
- Non-project-specific information regarding:
 - Geothermal resources, applications of geothermal heat and energy, environmental impacts, economics, legislation and government incentive programs;
 - The leasing process, upcoming lease sales, typical sale prices of leases, and the rights associated with obtaining leases; and
 - Permitting requirements for geothermal development.

2.2.2 Written Comments

Written comments were solicited in the form of comment cards to be submitted at scoping meetings, comment cards to be submitted by US Mail, written letters to be submitted by US Mail, written letters to be submitted by electronic mail and written letters to be submitted by facsimile.

Only two comment cards were submitted during the scoping meetings, and no comment cards were received by US Mail. Fifteen letters were submitted via US Mail, one letter was submitted in person, and 63 comment letters were submitted by electronic mail.

In addition to private individuals, the following agencies, organizations, and industries provided comments:

- California Wilderness Coalition
- Calpine Corporation
- Earth Systems Southwest
- Geothermal Energy Association
- Greater Yellowstone Coalition
- Idaho Conservation League
- New Mexico Department of Fish and Game
- Ormat Inc.
- Save Medicine Lake Coalition
- Sierra Club, Oregon Chapter
- Skamania County Public Utility District No. 1
- Utah Environmental Congress
- Utah Office of the Governor, Utah Geological Survey
- United States Environmental Protection Agency, Region IX
- Western Resource Advocates
- The Wilderness Society and Western Resource Advocates
- Wyoming Game and Fish Department
- Wyoming Outdoor Council

A list of all commentors and the date of submittal is provided in Appendix E.

Most written submissions included numerous comments. A summary of the written comments by author is provided in Appendix F. The comment forms provided instructions on requesting confidentiality and on requesting that individual names or addresses be withheld from public review or from disclosure under the Freedom of Information Act. One commentor who suggested areas of high geothermal potential requested to remain anonymous.

3.0 COMMENT SUMMARY

3.1 SUMMARY

The comments and concerns expressed at the public scoping meetings and in written and verbal comments are summarized below. Scoping comments and concerns are grouped into six (6) categories representing the common theme of the comments. Comments were related to the NEPA process, purpose and need, the impact analysis, alternatives, and project coordination. Some comments addressed issues pertinent to geothermal development, but were outside of the scope of the PEIS. A summary discussion of the comments is provided below.

Comments Related to the NEPA Process

- Ensure the PEIS conforms to all requirements of NEPA, including a complete project description, purpose and need for the project, description of the affected environment, analysis of impacts, and alternative analysis.
- Ensure the document adequately addresses the cumulative impacts of proposed and future geothermal projects, as well as the need for associated infrastructure such as transmission lines and roads. The cumulative analysis should adequately address impacts resulting from other nonrelated projects whose impacts may coincide with the impacts of geothermal leasing.
- Commentors were interested in how the document would be used as tiering document for subsequent, area-specific and site-specific environmental analyses.

Comments on the Purpose and Need

- Address how the project will satisfy the requirements of policy and regulations such as the Energy Policy Act of 2005.
- Describe the geographic scope of the project by demonstrating which areas provide high to moderate potential for geothermal resources and by describing which areas are excluded from the analysis and why. The PEIS should include the process used to designate these areas.
- Commentors were interested in whether the project would cover geothermal development on Tribal Lands
- Commentors were interested to know how the PEIS would address individual backlogged leases
- Comments included the need to define current and future technologies and describe which technologies the document would address in the impacts and alternatives analysis.
- Comments included a request that several specific areas be included in the analysis as potential lease areas, while other areas were proposed for exclusion from the project analysis.

Comments on Impact Analysis

- Comments generally addressed the need for the document to analyze all potential impacts related to geothermal exploration and development. The most common concerns were effects to wildlife, wildlife habitat, groundwater, and visual impacts. Comments also emphasized the

need for mitigation and monitoring measures that reduce the risk and potential for seismic events caused by geothermal development.

Comments on Alternatives

- Comments requested an alternative that excludes leasing of sensitive areas, such as special designated lands, including Areas of Critical Environmental Concern, wilderness areas, and wild and scenic rivers. Comments also stated lands surrounding Yellowstone National Park should be excluded to protect the geothermal resources of that landscape.
- An alternative suggested during public scoping proposed leasing only be allowed near existing infrastructure and transmission lines.

Comments on Coordination and Consultation

- Federal and state agencies with management jurisdiction and oversight of potentially affected natural resources should be included and consulted throughout the geothermal PEIS process.
- Commentors wanted to know how the PEIS would identify areas of high potential without divulging valuable proprietary information of potential developers who have already identified resources within the areas.
- Tribal governments should be involved throughout the process.
- The scoping period should be extended and additional scoping meeting locations should be added to allow full scoping opportunities.

Comments Outside the Scope of the PEIS

- This should be a joint NEPA/CEQA (California Environmental Quality Act) document and should identify the CEQA lead agency.
- The document should include provisions that detail the necessary enforcement to ensure that reclamation is effectively completed after exploration activities.
- Agencies should also be obliged to research and disclose the environmental and legal track record of potential geothermal leaseholders.
- The document should assess impacts from development on tribal lands

4.0 FUTURE STEPS

4.1 SUMMARY OF FUTURE STEPS AND PUBLIC PARTICIPATION OPPORTUNITIES

The next phase of the NEPA process will be to identify alternatives. These alternatives will address resource issues identified during scoping and will meet the Purpose and Need of the project. In compliance with NEPA, CEQ regulations, and the BLM and FS planning regulations and guidance, alternatives should be reasonable and capable of implementation. The BLM will also continue to dialogue with collaborating agencies, interested tribes, and community groups and individuals. A detailed analysis of the alternatives will be completed, and the BLM/FS' preferred alternative will then be selected and analyzed in detail.

The analysis of the alternatives will be documented in a draft PEIS. Although the BLM and FS welcome public input at any time during the NEPA process, the next official public comment period will begin when the draft PEIS is published, which is scheduled for March 2008. The draft document will be widely distributed to stakeholders on the project mailing list, and it will be available on the project Web site at www.blm.gov/geothermal_eis. The BLM and FS will be accepting comments on the draft PEIS. The availability of the draft document will be announced via a Notice of Availability in the *Federal Register*, and a 90-day public comment period will follow. Public meetings will be held in Anchorage, Boise, Denver, Missoula, Phoenix, Portland, Reno, Sacramento, Salt Lake City and Santa Fe during the 90-day period.

At the conclusion of the public comment period, the draft PEIS will be revised. A final PEIS will then be published. The availability of the document will be announced in the *Federal Register*, and a public protest period will follow (43 Code of Federal Regulations (CFR) Part 1610.5.2.). If necessary, a notice will be published in the *Federal Register* requesting comments on significant changes made as a result of protest.

At the conclusion of the public protest period, the BLM and FS will resolve all protests and any inconsistencies, and the Record of Decision (ROD) will be published. The availability of the ROD will be announced in the *Federal Register*.

All publications, including this report, newsletters, the draft PEIS, the final PEIS, and the ROD will be published on the official project Web site, at www.blm.gov/geothermal_eis. In addition, pertinent dates regarding solicitation of public comments will be published on the Web site.

4.2 CONTACT INFORMATION

The public is invited and encouraged to participate throughout the planning process for the PEIS. Some ways to participate include the following:

- Reviewing the progress of the PEIS at the official project Web site (above), which will be updated with information, documents, and announcements throughout the duration of the PEIS preparation;
- Attending the public meetings during the 90-day review period of the draft PEIS, the dates and locations of which will be announced in the project newsletter and on the project website; and
- Requesting to be added to or to remain on the official project mailing list in order to receive future mailings and information.

Anyone wishing to be added to or deleted from the distribution list or requesting further information may e-mail a request to geothermal_eis@blm.gov or contact Andrew Gentile, PEIS Public Outreach

Coordinator at EMPS, 944 Market Street, Suite 509, San Francisco, CA 94102. Please provide your name, mailing address, and e-mail address, as well as your preferred method to receive information.

APPENDIX A

Notice of Intent, as Published in Federal Register

The attached pages from the *Federal Register* include the NOI for the PEIS. The NOI was published on June 13, 2007, and officially initiated the scoping process for the project.

This page intentionally left blank

changes incorporated into the Final Bair Island Restoration and Management Plan and EIS and/or through responses to the comments, which are included in the Final EIS.

The ROD for the Bair Island Restoration and Management Plan has been prepared by the Service in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended. It documents the decision of the Service, based on the information contained in the Final Bair Island Restoration and Management Plan EIS and the entire Administrative Record. The Service adopted and plans to implement Alternative 1, Tidal Marsh Restoration with Moderate Public Access. This alternative has been identified by the Service as the alternative that would best achieve the goal of the restoration plan, the refuge purposes, and contribute toward the mission of the National Wildlife Refuge System, consistent with sound principles of fish and wildlife science, conservation, legal mandates, and Service policies. The selected alternative would restore Bair Island to a tidal salt marsh to provide habitat for endangered species and other native wildlife as well as to enhance the public's appreciation and awareness of the unique resources at Bair Island. Once restored, the site will assist with the preservation and recovery of both the California clapper rail and the salt marsh harvest mouse. These two species were listed by the Fish and Wildlife Service as endangered species on October 13, 1970.

The restoration of Bair Island would take place in phases. The first phase would be breaching of Outer Bair Island at two locations on Steinberger Slough near its entrance to San Francisco Bay. The second phase would be restoration of Inner and Middle Bair Island by breaching their former commercial salt pond levees after constructing a flow restrictor in Corkscrew Slough and reestablishing the historic meander of Smith Slough on Inner Bair Island. Dredge and/or fill material would raise the bottom elevation of Inner Bair Island to quicken the establishment of vegetated marsh. The third phase, which could take place during or after the first two phases, would be the construction of wildlife oriented public use facilities on Inner Bair Island and a portage with wildlife viewing platform on Outer Bair Island. Inner Bair Island improvements would include a new pedestrian bridge from the existing Refuge parking lot, a 1.8 mile public trail, and two wildlife viewing platforms with interpretive signage.

The Service considered the environmental and relevant concerns presented by agencies, organizations, and individuals and believes that implementing Alternative 1 is the best way to achieve the vision and goals of the restoration project. The selected alternative is also the most consistent with the purposes of the Refuge, the mission of the National Wildlife Refuge System, and the recovery actions proposed for the federally listed species found in the area. This alternative recognizes the need to restore habitat essential to the recovery of listed species as well as other tidal wetland dependent native species. The selected alternative also includes appropriate types and levels of recreational access for the public to experience and enjoy the resources being protected.

Dated: June 7, 2007.

Ken McDermond,

Deputy Manager, California/Nevada Operations Office, Sacramento, California.

[FR Doc. E7-11392 Filed 6-12-07; 8:45 am]

BILLING CODE 4310-55-P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[WO-300-9131-PP]

Notice of Intent To Prepare a Programmatic Environmental Impact Statement for Leasing of Geothermal Resources

AGENCIES: Bureau of Land Management, Interior; and U.S. Forest Service, Agriculture.

ACTION: Notice of Intent to Prepare a Programmatic Environmental Impact Statement for Leasing of Geothermal Resources.

SUMMARY: In accordance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321), the Bureau of Land Management (BLM) and the United States Forest Service (USFS) will prepare a joint Programmatic Environmental Impact Statement (PEIS) to analyze the leasing of BLM- and USFS-administered lands with moderate to high potential for geothermal resources in eleven western states and Alaska.

DATES: This notice initiates the public scoping process for the PEIS. The BLM and the USFS will accept written comments on the scope of the PEIS postmarked by August 13, 2007, and electronic or faxed comments received by August 13, 2007. Public scoping meetings to obtain comments for the PEIS will be held in Anchorage, Alaska;

Boise, Idaho; Denver, Colorado; Missoula, Montana; Phoenix, Arizona; Portland, Oregon; Reno, Nevada; Sacramento, California; Salt Lake City, Utah; and Santa Fe, New Mexico. Times and locations of the scoping meetings will be announced at least 15 days prior to the meetings in the local news media and on the project Web site: http://www.blm.gov/Geothermal_EIS. Public scoping will be open until August 13, 2007.

ADDRESSES: You may submit comments by any of the following methods:

- *E-mail:* geothermal_EIS@blm.gov.
- *Fax:* 1-866-625-0707.
- *U.S. Mail:* Geothermal

Programmatic EIS, c/o EMPS Inc., 182 Howard Street, Suite 110, San Francisco, CA 94105.

FOR FURTHER INFORMATION CONTACT: For further information, including information on how to comment, you may contact Jack G. Peterson, Bureau of Land Management at 208-373-4048, Jack_G_Peterson@blm.gov, or Tracy Parker, Forest Service at 703-605-4796, tparker03@fs.fed.us or visit the Programmatic EIS Web site at http://www.blm.gov/Geothermal_EIS.

SUPPLEMENTARY INFORMATION: The BLM and the USFS will prepare a joint PEIS for geothermal leasing on BLM- and USFS-administered lands in the western United States (including Alaska) with moderate to high potential for geothermal resources. The U.S. Department of Energy plans to participate as a cooperating agency in view of its special expertise, and may adopt the PEIS to help it more efficiently meet its NEPA review obligations. The analysis area includes BLM- and USFS-administered lands in Alaska, Arizona, California, Colorado, Idaho, Nevada, New Mexico, Montana, Oregon, Utah, Washington, and Wyoming. This PEIS will not include congressionally withdrawn lands, Wilderness Areas, Wild and Scenic Rivers, or lands not administered by the BLM or the USFS. For more information related to areas in these states with potential for geothermal resources see the public Web site: http://www.blm.gov/Geothermal_EIS. This Web site will include links to many source documents including United States Geological Survey Circular 790 and the Western Governor's Association Geothermal Task Force Report. Source information will continue to be updated and expanded as a result of this scoping process. The PEIS will be prepared in accordance with applicable Council on Environmental Quality regulations at 40 CFR 1500-1508, and applicable BLM and USFS regulations.

Geothermal resources are indirectly used to generate electric power and directly used for many things such as heating buildings and aquaculture. Energy markets are driving increased demand for renewable geothermal energy. Advances in the engineering, technology and economics of geothermal exploration and improvements in the design and development of energy generation facilities have resulted in increased interest in areas with geothermal potential. Several recent Federal and state actions also are driving the increase in renewable energy activity, including geothermal energy leasing, exploration and development activity. These actions include the President's National Energy Policy; the Western Governors' Association Geothermal Task Force Report; and the Energy Policy Act of 2005.

The goal of the PEIS is to examine the potential impacts of geothermal leasing on certain lands administered by the BLM and the USFS. Completion of the PEIS will improve the efficiency and effectiveness of the geothermal leasing and application process on Federal lands. The analysis in the PEIS will serve the following two purposes.

(1) Analyze the impacts of leasing in areas that are determined through scoping to have reasonable near-term exploration/development potential for geothermal resources, including areas for which leasing applications have not yet been filed. The PEIS will thereby assist the BLM in determining how best to amend, as appropriate, its land use plans for these areas, by identifying the potential for geothermal development in the areas and determining the areas where geothermal development will be considered as an allowable use. The PEIS will similarly address USFS-managed lands that have potential for geothermal resources and provide the basis for future geothermal leasing availability analysis and decisions.

(2) Enable the BLM to reduce the backlog of lease applications that were pending on BLM- and USFS-administered lands as of January 1, 2005 by at least 90 percent as required by section 225(b)(3) of the Energy Policy Act of 2005. This Act gives the BLM until August 8, 2010, to achieve this goal. As of January 1, 2005, there were nearly 100 applications for geothermal leases pending on BLM and USFS lands. The PEIS will include the necessary site specific analysis to facilitate processing of these pending lease applications by deciding whether geothermal leasing is appropriate and under what stipulations they may be leased.

Comments are being solicited so as to determine: (1) The scope of this analysis, (2) significant issues or concerns related to the proposed actions, and (3) alternatives to the proposed actions.

The BLM will provide further information at the scoping meetings regarding the locations of, and the planning areas and forests that may be affected by, the actively pending applications. The purpose of the public scoping process is to identify issues that should be addressed in the environmental analysis and the scope of the alternatives. You may submit comments in writing at any public scoping meeting, or you may submit them using one of the methods listed in the **ADDRESSES** section above. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Douglas Burger,

Acting Assistant Director, Minerals, Realty and Resource Protection, Bureau of Land Management.

Frederick Norbury,

Associate Deputy Chief for National Forest System, U.S. Forest Service.

[FR Doc. 07-2921 Filed 6-12-07; 8:45 am]

BILLING CODE 4310-84-P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[ID 100 1220MA 214A: DBG071008]

Notice of Public Meeting: Joint Recreation Resource Advisory Council Subcommittee to the Boise and Twin Falls Districts, Bureau of Land Management, U.S. Department of the Interior

AGENCY: Bureau of Land Management, U.S. Department of the Interior.

ACTION: Notice of public meeting.

SUMMARY: In accordance with the Federal Land Policy and Management Act (FLPMA) and the Federal Advisory Committee Act of 1972 (FACA), the U.S. Department of the Interior, Bureau of Land Management (BLM) Boise and Twin Falls District Recreation Resource Advisory Council (Rec-RAC) Subcommittee, will hold a meeting as indicated below.

DATES: The meeting will be held July 12, 2007, beginning at 9 a.m. and adjourning at 12 noon. The meeting will be held at the Oregon Trail Interpretative Center, West Madison Street, Glenns Ferry, Idaho. Public comment periods will be held before the conclusion of the meeting.

FOR FURTHER INFORMATION CONTACT: MJ Byrne, Public Affairs Officer and RAC Coordinator, BLM Boise District, 3948 Development Ave., Boise, ID 83705, Telephone (208) 384-3393, or Heather Tiel, Public Affairs Officer, BLM Twin Falls District, 2536 Kimberly Rd., Twin Falls, ID 83301, (208) 735-2076.

SUPPLEMENTARY INFORMATION: In accordance with section 4 of the Federal Lands Recreation Enhancement Act of 2005, a Subcommittee has been established to provide advice to the Secretary of the Interior, through the BLM, in the form of recommendations that relate to public concerns regarding the implementation, elimination or expansion of an amenity recreation fee; or recreation fee program on public lands under the jurisdiction of the U.S. Forest Service and the BLM in both the Boise and Twin Falls Districts located in southern Idaho. The Resource Advisory Councils in each District have formally approved the members of the new Joint Rec-RAC Subcommittee, including any non-RAC member. Items on the agenda include introductions; review and discussion of roles and responsibilities of the subcommittee members as well as the Coordinators from each of the two agencies. A draft charter will be presented for discussion review and for approval at the Joint RAC meeting of the Boise and Twin Falls RACs to be held in the fall of 2007. Information about the proposed fee changes at sites under the jurisdiction of the two agencies will be presented to enable subcommittee member's time for review prior to the next meeting when they will be asked to approve fee changes. Agenda items and location may change due to changing circumstances, including wildfire emergencies. All meetings are open to the public. The public may present written comments to the Subcommittee. Each formal subcommittee meeting will also have time allocated for hearing public comments. Depending on the number of persons wishing to comment and time available, the time for individual oral comments may be limited. Individuals who plan to attend and need special assistance, such as sign language interpretation, tour transportation or other reasonable accommodations, should contact the BLM Coordinators as provided above. Expedited publication

APPENDIX B

Sample Display Ad from Anchorage Daily News

The following is the display ad that was published in the Anchorage Daily News. Similar ads were placed in the major newspapers of all 10 cities in which scoping meetings were held.

Notice of Intent to Prepare an Environmental Impact Statement

The Bureau of Land Management (BLM) and the U.S. Forest Service (FS) will prepare a joint Programmatic Environmental Impact Statement (PEIS) for geothermal leasing on BLM- and FS-administered lands in the following 12 states: AK, AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA and WY. A public meeting providing more information and an opportunity for public input will be held on Wed Jul 25 2007 from 4:30 to 7:30 pm at the Alaska Energy Authority, 813 Northern Lights Blvd, Anchorage AK 99503. For further information, visit the PEIS web site at www.blm.gov/Geothermal_EIS.

This page intentionally left blank

APPENDIX C

Newsletter #1 – Hard Copy

The following is the 4-page, hard-copy newsletter that was mailed out to approximately 1,600 recipients from the project mailing list. The electronic copy is available on the project website at www.blm.gov/geothermal_eis.

This page intentionally left blank



WESTERN GEOTHERMAL GAZETTE

Western Geothermal Programmatic EIS
Volume I, Number 1 . June 2007

BLM USFS

Geothermal PEIS Kick-Off

The Energy Policy Act of 2005 mandates that the Bureau of Land Management (BLM) and US Forest Service (FS) enhance the development of renewable energy, including geothermal, on Public Lands and National Forest lands.

The National Environmental Policy Act requires government agencies to study the effects that their actions might have on the natural environment—air, water and soil, of course, and also on plants and animals and cultural resources. The BLM and FS will consult with Indian Tribes throughout the project. The BLM and FS will comply with all Federal laws while preparing a Programmatic Environmental Impact Statement (PEIS) for their geothermal land leasing project. The US Geological Survey is providing scientific support and the Department of Energy is providing technical support for this project.

What is this Project About?

- The PEIS will analyze environmental impacts of leasing Public Lands and National Forest lands for geothermal exploration and development.
- This will allow the BLM and FS to identify areas of high geothermal potential available for leasing.
- Environmental analysis will also be conducted for unprocessed lease applications submitted to the BLM and FS before January 1, 2005, allowing decisions on these applications.

The PEIS covers
geothermal leasing on
Public Lands and National
Forest lands in 12
western states:

- ♦ Alaska
- ♦ Arizona
- ♦ California
- ♦ Colorado
- ♦ Idaho
- ♦ Montana
- ♦ Nevada
- ♦ New Mexico
- ♦ Oregon
- ♦ Utah
- ♦ Washington
- ♦ Wyoming

Why is this Project Happening?

- The Energy Policy Act of 2005 calls for accelerated development of domestic energy sources, including renewable geothermal energy.
- The PEIS will allow for streamlined lease application processing, accelerating geothermal exploration and development in the West and increasing renewable energy sources in the US.



Scoping
Meetings
July 2007



Draft PEIS
Winter
2007/2008



Public
Meetings
Spring 2008



Final PEIS
Summer
2008



Record of
Decision
Fall 2008

Geothermal 101

What is Geothermal Energy?

Geo means *earth*, and *thermal* means *heat*.

Geothermal energy power plants extract energy from superheated water and steam deep in the earth's crust and convert it into electricity.

Even low-to-moderate temperature waters can be used for direct uses, including heating buildings, supplying water for aquaculture and processing food.

Geothermal energy is EARTH POWER!



This geothermal steam power plant in Steamboat Springs, Nevada, emits mostly water vapor.

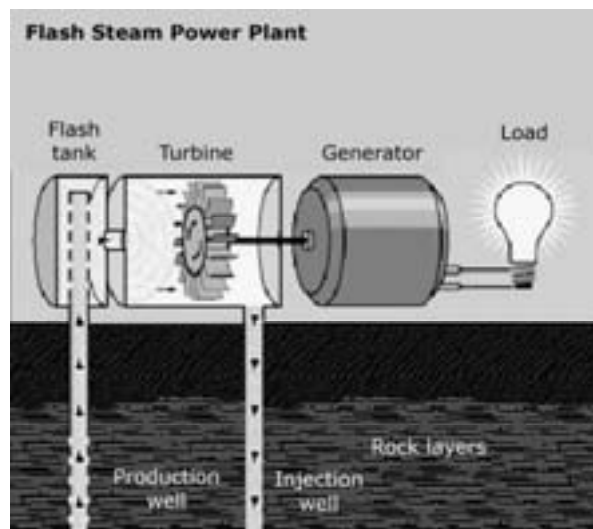
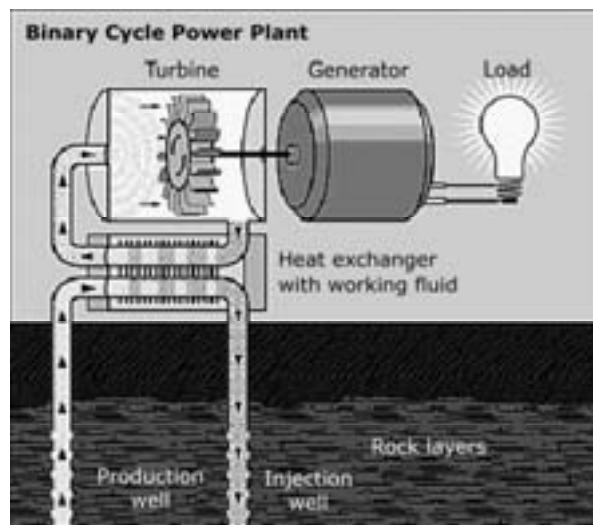
How Does a Geothermal Power Plant Work?

Heated groundwater deep in the earth is brought to the surface via wells. The heat energy is extracted from the fluid and converted into electrical energy. After capturing the thermal energy, the water is re-injected back into the earth.

There are three kinds of power plants that can be used, depending on the temperature of the geothermal reservoir and if the reservoir is fluid, steam or hot rock. These are binary cycle, flash and dry steam plants.

Binary cycle and flash plants are the most common and their modes of operation are illustrated to the right. Information on dry steam plants is available via resources linked to on the "Guide and Links" page of the project website.

For a video explanation of a flash plant, go to www.geothermal.org/virtualgeo.html.



The new BLM regulations for leasing geothermal resources on public lands went into effect on June 1 2007. You can view these regulations at:
www.blm.gov/geothermal_eis

We Need Your Help!

How Can I Get Involved and Stay Informed?

Visit the project Web site over the lifetime of the project at: www.blm.gov/geothermal_eis

Add yourself to our mailing list by sending an e-mail to: geothermal_eis@blm.gov

Attend pre-project public meetings: Public scoping meetings will be held in 10 cities across the western US to provide you with information, to allow you to help identify areas to be included in the project for analysis and to let us know the issues of concern to you. See the meeting locations and dates in the table below.

Submit your comments: E-mail: geothermal_eis@blm.gov Fax: 1-866-625-0707

US Mail: Geothermal Programmatic EIS
c/o EMPS Inc.
182 Howard Street, Suite 110
San Francisco, CA 94105-1611

Share your thoughts with the national project manager. Call Jack G. Peterson at 208-373-4048, or email at jack_g_peterson@blm.gov.



Public Scoping Meetings Scheduled for July 2007

Come out to learn more and to help us identify:

- ♦ Areas of likely geothermal development to be included in our analysis
- ♦ Your environmental, social, cultural, health and any other concerns related to the project

All meetings will run from 4:30 pm to 7:30 pm, with dates and locations below. Meetings will be “open house” in format, with a 20-minute presentation by the BLM and FS at 6:00, followed by a question-and-answer period.

City	Date	Location
Anchorage AK	Wed 7/25	Main Lobby Alaska Energy Authority 813 W Northern Lights Blvd Anchorage, AK 99503
Boise ID	Tue 7/10	William F. Hayes Memorial Audit. Boise Public Library 715 S. Capitol Blvd. Boise, ID 83702
Denver CO	Mon 7/9	Evergreen A Room PPA Event Center 2105 Decatur Street Denver, CO 80211
Missoula MT	Mon 7/30	Russell/Lewis Room Doubletree Hotel 100 Madison Missoula, MT 59802
Phoenix AZ	Wed 7/11	Lecture Room Burton Barr Central Library 1221 N. Central Ave. Phoenix, AZ 85004

City	Date	Location
Portland OR	Mon 7/23	Lipman Wolfe B Room Hotel Monaco 506 S.W. Washington Street Portland, OR 97204
Reno NV	Tue 7/17	Manzanita Room Jot Travis Student Union University of Nevada, Reno N. Virginia St. Reno, NV 89511
Sacramento CA	Wed 7/18	Hearing Room A California Energy Commission 1516 Ninth Street Sacramento, CA 95814
Salt Lake City UT	Mon 7/16	Level 4 Conference Room Salt Lake City Public Library 210 East 400 South Salt Lake City UT 84111
Santa Fe NM	Thu 7/12	Main Bldg, Jemez Room I Santa Fe Community College 6401 Richards Avenue Santa Fe, NM 87508

Dear Readers

This is the first of several newsletters that you will receive from the Bureau of Land Management and Forest Service about their Programmatic Environmental Impact Statement. This newsletter marks the beginning of the public outreach activities. Your input from this public outreach effort will be incorporated into the PEIS.

We Want to Hear From YOU!

Send your comments to:

Geothermal_eis@blm.gov

or

Geothermal Programmatic EIS

c/o EMPS Inc.

182 Howard Street, Suite 110

San Francisco, CA 94105-1611

Public Meetings Scheduled

Denver	July 09	Reno	July 17
Boise	July 10	Sacramento	July 18
Phoenix	July 11	Portland	July 23
Santa Fe	July 12	Anchorage	July 25
Salt Lake City	July 16	Missoula	July 30

**Geothermal
PEIS
Kick-Off!**

Printed on Recycled Paper



**Acting as contracted agent for the Bureau of Land Management and Forest Service*

San Francisco, CA 94105-1611
182 Howard Street, Suite 110

c/o EMPS, Inc.*

Bureau of Land Management
US Department of the Interior

**Official Business
Penalty for Private Use, \$300**

FIRST-CLASS MAIL
U.S. POSTAGE & FEES PAID
BUREAU OF LAND MANAGEMENT
PERMIT NO. G-76

APPENDIX D

Materials Used at Scoping Meetings

This page intentionally left blank

Geothermal Resources Leasing PEIS

Public Scoping Meeting Materials

July 2007

This page lists all of the materials that were used for display, handout and presentation for the PEIS public scoping meetings. Only two items are state-specific: the federal land status map, and the geothermal resources map. This example uses Denver, CO.

Sign-In / Welcome Table

- Sign-in sheets
- Comment cards
- Mail-in comment cards
- Name tags
- Newsletter #1 (handout)
- NOI (handout)
- Qs & As (handout)
- Geothermal FAQs (handout)
- Pending Lease Applications (handout)

Learning Station 1: What Are Geothermal Resources?

- Mounted poster with two figures – (1) earth cut-away; (2) geothermal resources
- DVD – “Geothermal Energy – A Renewable Option”

Learning Station 2: How is Geothermal Energy Used?

- Mounted poster – “Geothermal Energy Uses”
- Mounted poster with two figures – (1) Indirect use; (2) Direct use
- DVD – Virtual Power Plant Tour

Learning Station 3: Where Are Geothermal Resources Located?

- Mounted poster – SMU Heatflow Map of the United States
- Clipped map - SMU Heatflow Map of North America
- Clipped map - State-specific INEL or other modern map of geothermal resources for the state we are in

Learning Station 4: Where are BLM and FS Lands?

- Mounted Nationwide Land Status Map from NationalAtlas.gov
- Clipped map – State-specific land status map from NationalAtlas.gov

Learning Station 5: What is the PEIS Process?

- Poster of NEPA Process

PowerPoint Presentation

Sign-In / Welcome Table

- Sign-in sheets
- Comment cards
- Mail-in comment cards
- Name tags
- Newsletter
- NOI
- Qs & As
- Geothermal FAQs
- Pending Lease Applications

This page intentionally left blank



**Bureau of Land Management and Forest Service
Geothermal Resources Leasing PEIS**



We encourage you to provide your comments by filling out and submitting this comment form **by August 13, 2007**. Please fax your completed form to 1-866-625-0707 or mail it to the address on the opposite side. You are also welcome to e-mail your comments to: geothermal_eis@blm.gov

Your Name _____ Date _____

Mailing Address _____ City/State/Zip _____

Telephone (optional) _____ E-Mail Address (optional) _____

Would you like to be added to this project's mailing list to receive future project-related information? Yes No

Please indicate your affiliation by checking **one** of the following boxes:

Individual (no affiliation)

Private Organization

Citizen's Group

Federal, State, or Local Government

Elected Representative

Regulatory Agency

Name of organization, government, group, or agency (if applicable) _____

The BLM and FS want to hear from you! The following questions have been provided to help guide you in providing comments that are within the scope of this project. Other comments are welcome.

1) Which areas, if any, do you consider to have high geothermal potential that you feel should be analyzed in the PEIS?

2) What, if any, environmental concerns do you have with geothermal development? If applicable, please relate these concerns to specific locations, features (landmarks, water bodies, historic or tribal sites, etc.) or resources (plants, animals, water quality, air quality, etc.) that you may be concerned about.

*(Continue your
comments on
the other side)*

If you wish to withhold your name or address from public review or from disclosure under the Freedom of Information Act, you must state this prominently in your comments. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives of organizations or businesses, will be made available for public inspection in their entirety.

3) Please provide any other comments that you have regarding the project.

_____ (Please fold this sheet in half & tape shut before mailing – Do not staple) _____

**Place
First Class
Stamp
Here**

**Geothermal Programmatic EIS
c/o EMPS Inc.*
182 Howard Street, Suite 110
San Francisco, CA 94105-1611**

**Acting as a contracted agent
for the Bureau of Land Management
and Forest Service*



WESTERN GEOTHERMAL NEWS

Western Geothermal Programmatic EIS
www.blm.gov/geothermal_eis

June 2007

BLM USFS

News Release

Bureau of Land Management
Forest Service
June 14, 2007

Contacts:

Heather Feeney, 202-452-5130
BLM Public Affairs
Joe Walsh, 202-205-1134
Forest Service Press Office
Jack G. Peterson
National Project Manager
208-373-4048

BLM and FS Launch Effort to Facilitate Renewable Energy Development on Federal Lands

WASHINGTON – In response to the increased national demand for clean renewable energy, the Bureau of Land Management (BLM) and the US Forest Service (FS) today announced it will prepare a programmatic environmental impact statement (PEIS) analyzing areas with high potential for geothermal energy development.

According to a notice published in today's *Federal Register*, the PEIS will examine the environmental impacts of boosting geothermal leasing in areas with high potential for near-term exploration and development of geothermal resources. If deemed appropriate by the PEIS, the BLM and FS will amend the respective land use plans in those areas to allow for expanded leasing.

"The BLM is sitting on the largest supply of geothermal energy in this country, and it is time to launch an aggressive program to develop those resources," said BLM Acting Director Jim Hughes. "This proceeding will help us determine which areas to concentrate our geothermal leasing efforts on." The PEIS will focus on areas with high geothermal potential in 11 western states and Alaska. These areas will include those identified by the BLM, the FS, and the U.S. Geological Survey, as well as by the public and other stakeholders. The entire west is being considered, including areas in northwestern Nevada, northeastern California, and the Raft River Basin in Idaho.

"The Forest Service looks forward to working in concert with BLM on these geothermal projects," said Forest Service Chief Gail Kimbell. "Enhancing our nation's energy needs through safe and clean energy is an important focus of the Department of Agriculture and a proper use of our public lands." The PEIS will also analyze the steps necessary to facilitate the processing of the approximately 100 geothermal lease applications that were pending as of January 1, 2005, as mandated by the Energy Policy Act of 2005. The law stipulated that 90% of these applications must be issued, rejected, or otherwise disposed of by August 8, 2010.



Continued on back page...

...continued from front page

Publication of the notice of intent launches a 60-day period in which the public can comment on the PEIS. Input is being sought on which areas with high geothermal potential should be examined, as well as definition and refinement of the development alternatives that will be proposed in the draft EIS. Public meetings in which interested parties can comment on the proceeding will be held in 10 western cities.

Geothermal resources, such as steam and hot water, are used directly to heat buildings and in greenhouses and aquaculture, and indirectly to generate electric power. Geothermal energy accounts for 17 percent of the electricity generated from renewable sources in the U.S. Half of the nation's geothermal energy production occurs on federal land, much of it in California and Nevada, and 90% of the potential resources are located on public lands as well. Other states with geothermal activity include Oregon, Utah, Idaho and New Mexico.

Geothermal leasing is permitted on Interior and other federal lands that are designated for this type of development. The BLM currently administers about 420 geothermal leases; 55 of those are producing geothermal energy, including 34 power plants. The BLM has been expediting the application process for geothermal leases, issuing 291 leases since 2001, compared to 25 leases from 1996-2001.





WESTERN GEOTHERMAL NEWS

Western Geothermal Programmatic EIS
www.blm.gov/geothermal_eis

June 2007

BLM USFS

Geothermal PEIS: Qs and As

The following Qs and As were distributed with the June 13 2007 press release announcing the NOI

Q: What are the BLM and FS doing today?

A: The Bureau of Land Management (BLM) and the US Forest Service (FS) published in the Federal Register a notice of intent to prepare a programmatic environmental impact statement (PEIS) analyzing areas with high potential for geothermal energy development. The goal of the PEIS is to improve the efficiency and effectiveness of the geothermal leasing process on federal lands.

The PEIS will examine the environmental impacts of boosting geothermal leasing in areas with high potential for near-term exploration and development of geothermal resources. If deemed appropriate by the PEIS, the BLM and FS will amend the respective land use plans in those areas to allow for expanded leasing.

The PEIS will also analyze the steps necessary to facilitate the processing of the approximately 100 geothermal lease applications that were pending as of January 1, 2005, as mandated by the Energy Policy of Act of 2005. The law stipulated that 90% of these applications must be issued, rejected, or otherwise disposed of by August 8, 2010.

Q: What led the BLM and FS to undertaking this expansion of the geothermal program?

A: The BLM and FS initiated this proceeding in response to the increased national demand for clean renewable energy, as well as specific interest in geothermal energy leasing and development. Advances in the engineering, technology and economics of geothermal exploration, and improvements in the design and development of geothermal generation facilities, have helped spur this demand.

There have been calls in recent years at both the federal and state levels for boosting geothermal development on public lands. For example, President Bush's National Energy Policy, released in 2001, directed the Interior Department to increase access to geothermal energy resources on federal lands, as well as to streamline the leasing of those resources. The Western Governors' Association also recommended last year in its Geothermal Task Force Report that the BLM and the FS coordinate more on the processing of geothermal lease applications, and amend land plans in areas with geothermal potential to encourage development of those resources.

Q: Which areas are the BLM and FS looking at?

A: The PEIS will focus on areas with high geothermal potential in 11 western states and Alaska. These areas will include those identified by the BLM, the FS, the U.S. Geological Survey and the US Department of Energy and State Geological Surveys, as well as by the public and other stakeholders. The entire west is being considered, including areas in northwestern Nevada, northeastern California, and the Raft River Basin in Idaho.

The PEIS will not consider any federally designated wilderness areas, Wild and Scenic Rivers, other lands withdrawn from leasing by Congress, or any non-BLM or -FS land.



Q: How do the leasing procedures differ from the geothermal regulations the BLM finalized earlier this month?

A: The regulations finalized by the BLM on June 1 2007 were designed to stimulate interest in geothermal resources on federal lands by authorizing more competitive leasing of those resources, as well as by simplifying the calculation of royalties collected on those leases. Those procedures only applied to geothermal leases issued after the rules went into effect. By contrast, the leasing provisions in the PEIS are designed to apply to lease applications that were pending at the time the Energy Policy Act was signed into law.

However, by amending existing land plans, the PEIS will also help guide the BLM in determining where to lease geothermal resources in the future. Any leases issued in those areas will still be subject to site-specific environmental analyses as required by the National Environmental Policy Act (NEPA).

Q: How will this facilitate development of geothermal energy on public lands?

A: Amending land use plans in areas with high geothermal potential ensures that cumulative impacts to the environment are assessed in these areas, and that best management practices that allow for geothermal resources to be developed in an environmentally responsible manner are identified. All of this in turn will ease the leasing of geothermal resources in these areas.

In addition, amassing a rich spectrum of biological, cultural, and geological data about areas with high geothermal potential will enable the geothermal industry, and the federal agencies with jurisdiction over the industry, to make better decisions about leasing and development in a much more reasonable time frame.

Q: How can the public provide input on the process?

A: Publication of the notice of intent launches a 60-day period in which the public can comment on the PEIS. Input is being sought on which areas with high geothermal potential should be examined, as well as definition and refinement of the development alternatives that will be proposed in the draft EIS.

Public meetings in which interested parties can comment on the proceeding will be held in Anchorage, Alaska; Boise, Idaho; Denver; Missoula, Montana; Phoenix; Portland, Oregon; Reno, Nevada; Sacramento, California; Salt Lake City; and Santa Fe, New Mexico. The dates, times and locations for the meetings will be announced at least 15 days in advance in local news media outlets, as well as on the geothermal project's web site (www.blm.gov/Geothermal_EIS).

Q: What is the schedule for completion of the EIS?

A: The BLM and FS aim to release a draft version of the EIS in December 2007. The agencies hope to finalize the EIS in the Fall of 2008.



Geothermal FAQs

What are the benefits of using geothermal energy?

Answer: Several attributes make it a good source of energy.

- First, it's **clean**. Energy can be extracted without burning a fossil fuel such as coal, gas, or oil. Geothermal fields produce only about one-sixth of the carbon dioxide that a relatively clean natural-gas-fueled power plant produces, and very little if any, of the nitrous oxide or sulfur-bearing gases. Binary plants, which are closed cycle operations, release essentially no emissions.
- Geothermal energy is **available 24 hours a day**, 365 days a year. Geothermal power plants have average availabilities of 90% or higher, compared to about 75% for coal plants.
- Geothermal power is homegrown, reducing our dependence on foreign oil.

Why is geothermal energy a renewable resource?

Answer: Because its source is the **almost unlimited amount of heat** generated by the Earth's core. Even in geothermal areas dependent on a reservoir of hot water, the volume taken out can be re-injected, making it a sustainable energy source.

Where is geothermal energy available?

Answer: Hydrothermal resources - reservoirs of steam or hot water - are available primarily in the **western states, Alaska, and Hawaii**. However, Earth energy can be **tapped almost anywhere** with geothermal heat pumps and direct-use applications. Other enormous and world-wide geothermal resources - hot dry rock and magma, for example - are awaiting further technology development.

What are the environmental impacts of using geothermal energy?

Answer: Geothermal technologies offer many environmental advantages over conventional power generation:

- **Emissions are low.** Only excess steam is emitted by geothermal flash plants. No air emissions or liquids are discharged by binary geothermal plants, which are projected to become the dominant technology in the near future.
- Salts and dissolved minerals contained in geothermal fluids are usually reinjected with excess water back into the reservoir at a depth well below groundwater aquifers. This **recycles the geothermal water and replenishes the reservoir**. The City of Santa Rosa, California, pipes the city's **treated wastewater up to The Geysers power plants to be used for re-injection fluid**. This system will prolong the life of the reservoir as it recycles the treated wastewater.
- Some geothermal plants do produce some solid materials, or sludges, that require disposal in approved sites. Some of these **solids are now being extracted for sale** (zinc, silica, and sulfur, for example), making the resource even more valuable and environmentally friendly.

What is the visual impact of geothermal technologies?

Answer: District heating systems and geothermal heat pumps are **easily integrated** into communities with almost no visual impact. Geothermal power plants use **relatively small acreages**, and **don't require storage, transportation, or combustion of fuels**. Either no emissions or just steam are visible. These qualities reduce the overall visual impact of power plants in scenic regions.

Is it possible to deplete geothermal reservoirs?

Answer: The **long-term sustainability** of geothermal energy production has been demonstrated at the Lardarello field in Italy since 1913, at the Wairakei field in New Zealand since 1958, and at The Geysers field in California since 1960. Pressure and production declines have been experienced at some plants, and operators have begun reinjecting water to maintain reservoir pressure. The City of Santa Rosa, California, pipes its treated wastewater up to The Geysers to be used as reinjection fluid, thereby prolonging the life of the reservoir while recycling the treated wastewater.

How much does geothermal energy cost per kilowatt-hour (kWh)?

Answer: At The Geysers, power is sold at \$0.03 to \$0.035 per kWh. A power plant **built today** would probably require about **\$0.05 per kWh**. Some plants can charge more during peak demand periods.

What does it cost to develop a geothermal power plant?

Answer: Costs of a geothermal plant are **heavily weighted toward early expenses, rather than fuel to keep them running**. Well drilling and pipeline construction occur first, followed by resource analysis of the drilling information. Next is design of the actual plant. Power plant construction is usually completed concurrent with final field development. The initial cost for the field and power plant is around **\$2500 per installed kW** in the U.S., probably \$3000 to \$5000/kWe for a small (<1Mwe) power plant. **Operating and maintenance costs range from \$0.01 to \$0.03 per kWh**. Most geothermal power plants can run at greater than 90% availability (i.e., producing more than 90% of the time), but running at 97% or 98% can increase maintenance costs. Higher-priced electricity justifies running the plant 98% of the time because the resulting higher maintenance costs are recovered.

What makes a site good for geothermal electric development?

Answer: Hot geothermal fluid with low mineral and gas content, shallow aquifers for producing and re-injecting the fluid, location on private land to simplify permitting, proximity to existing transmission lines or load, and availability of make-up water for evaporative cooling. Geothermal fluid temperature should be at least 300° F, although plants are operating on fluid temperatures as low as 210° F.

How much water does a plant require?

Answer: The flow required depends on the temperature of the fluid, the ambient (sink) characteristics, and the pumping power required to supply and dispose of the fluid. Excluding fluid pumping, a closed-loop binary-cycle geothermal power plant would need 450 to 600 gallons per minute (gpm) to generate 1 MW from a 300° F fluid with an air temperature of 60° F. If the fluid temperature were only 210° F, one would need 1,300 to 1,500 gpm to generate the same amount of power. If an evaporative cooling system were used, 45 to 75 gpm of make-up (clean) cooling water would also be required to generate 1 MW.

**Pending Lease Applications Submitted Prior to 1/1/2005
(Preliminary)**

Serial Number	Application Date	Acres	BLM or FS Office
Alaska			
AKAA 084543	3/31/2003	2560.00	
AKAA 084544	3/31/2003	2560.00	
AKAA 084545	3/31/2003	2560.00	
California			
CACA 042841	1/30/2001	270.00	Bishop FO
CACA 042844	1/30/2001	160.00	Bishop FO
CACA 046142	4/12/2004	2161.90	El Centro FO
CACA 043965	1/22/2002	1160.00	El Centro FO
CACA 042993	3/28/2001	2560.00	El Centro FO
CACA 042994	3/28/2001	1920.00	El Centro FO
CACA 042995	3/28/2001	1900.00	El Centro FO
CACA 046141	4/12/2004	640.00	El Centro FO
CACA 043993	1/31/2002	2540.00	Ridgecrest FO
CACA 043998	2/4/2002	1280.00	Ridgecrest FO
CACA 044082	2/21/2002	640.00	Ridgecrest FO
CACA 030351	7/1/1992	1895.00	Shasta NF
CACA 030352	7/1/1992	1930.00	Shasta NF
CACA 030353	7/1/1992	2560.00	Shasta NF
CACA 030743	9/1/1992	1000.00	Shasta NF
CACA 030354	7/1/1992	2127.38	Shasta NF
CACA 042989	3/29/2001	480.00	Modoc NF
CACA 043744	11/26/2001	2560.00	Modoc NF
CACA 043745	11/26/2001	2560.00	Modoc NF
Idaho			
IDI 034353	3/17/2003	1269.81	Idaho Falls DO
New Mexico			
NMNM 108801	2/28/2003	640.00	Las Cruces FO
Nevada			
NVN 079886	3/31/2004	2560.00	Toiyabe NF
NVN 074289	2/21/2001	605.92	Battle Mtn FO
NVN 076143	8/7/2002	610.78	Toiyabe NF
NVN 077218	6/17/2003	1920.00	Winnemucca FO
NVN 075468	12/18/2001	2226.67	Winnemucca FO
Oregon			
OROR 017049	12/1/1976	1538.00	Mount Hood NF
OROR 017051	12/1/1976	2480.00	Mount Hood NF
OROR 017052	12/1/1976	2480.00	Mount Hood NF
OROR 017053	12/1/1976	1376.77	Mount Hood NF
OROR 017327	3/1/1977	1294.81	Mount Hood NF
OROR 054517	12/1/1983	40.00	Mount Hood NF
OROR 054587	2/1/1974	1115.28	Willamette NF
OROR 054589	4/1/1988	160.00	Deschutes NF
Washington			
WAOR 056025	9/8/2000	2403.31	Mt Baker NF
WAOR 056027	9/8/2000	2560.00	Mt Baker NF
WAOR 056028	9/8/2000	2544.97	Mt Baker NF
WAOR 056029	9/8/2000	1941.92	Mt Baker NF

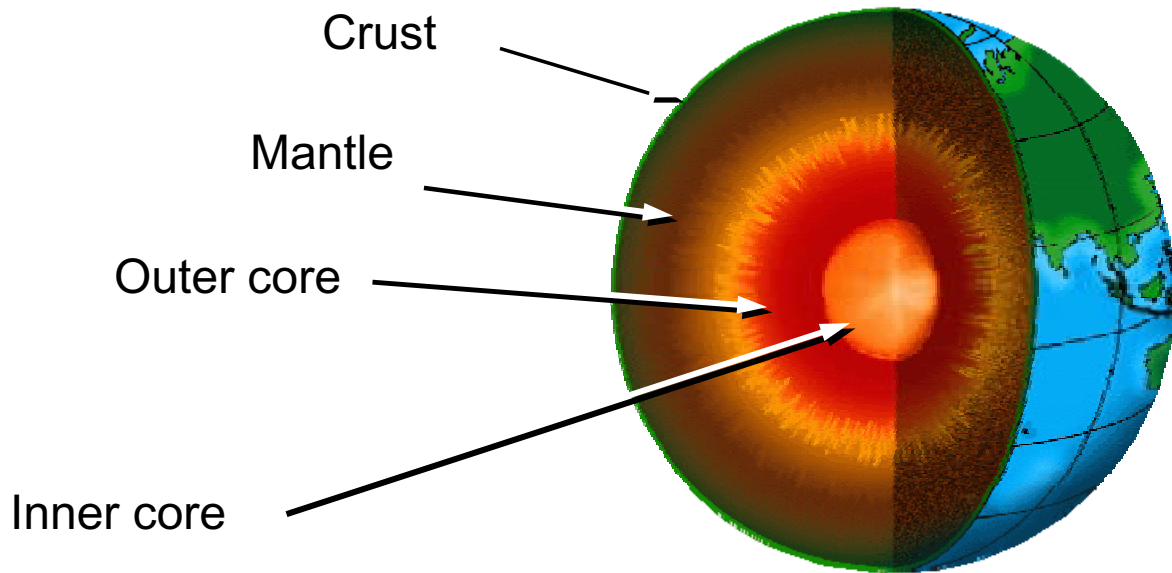
This page intentionally left blank

Learning Station I: What Are Geothermal Resources?

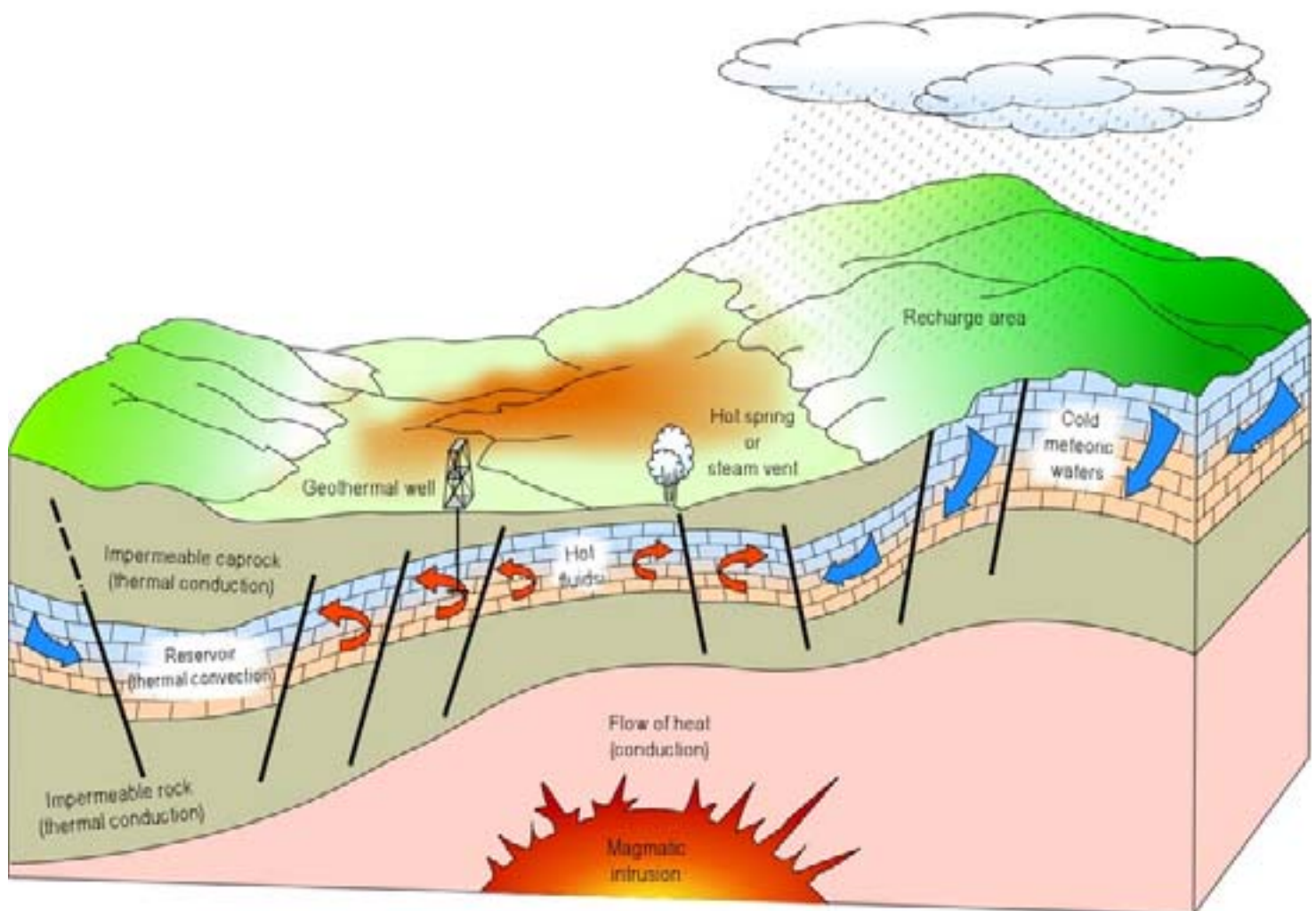
- Mounted poster with two figures – (1) earth cut-away; (2) geothermal resources
- DVD – “Geothermal Energy – A Renewable Option”

This page intentionally left blank

What are Geothermal Resources?



Heat flows outward from Earth's interior. The crust insulates us from Earth's interior heat. The mantle is semi-solid and semi-molten rock, the outer core is liquid, and the inner core is solid.



This page intentionally left blank

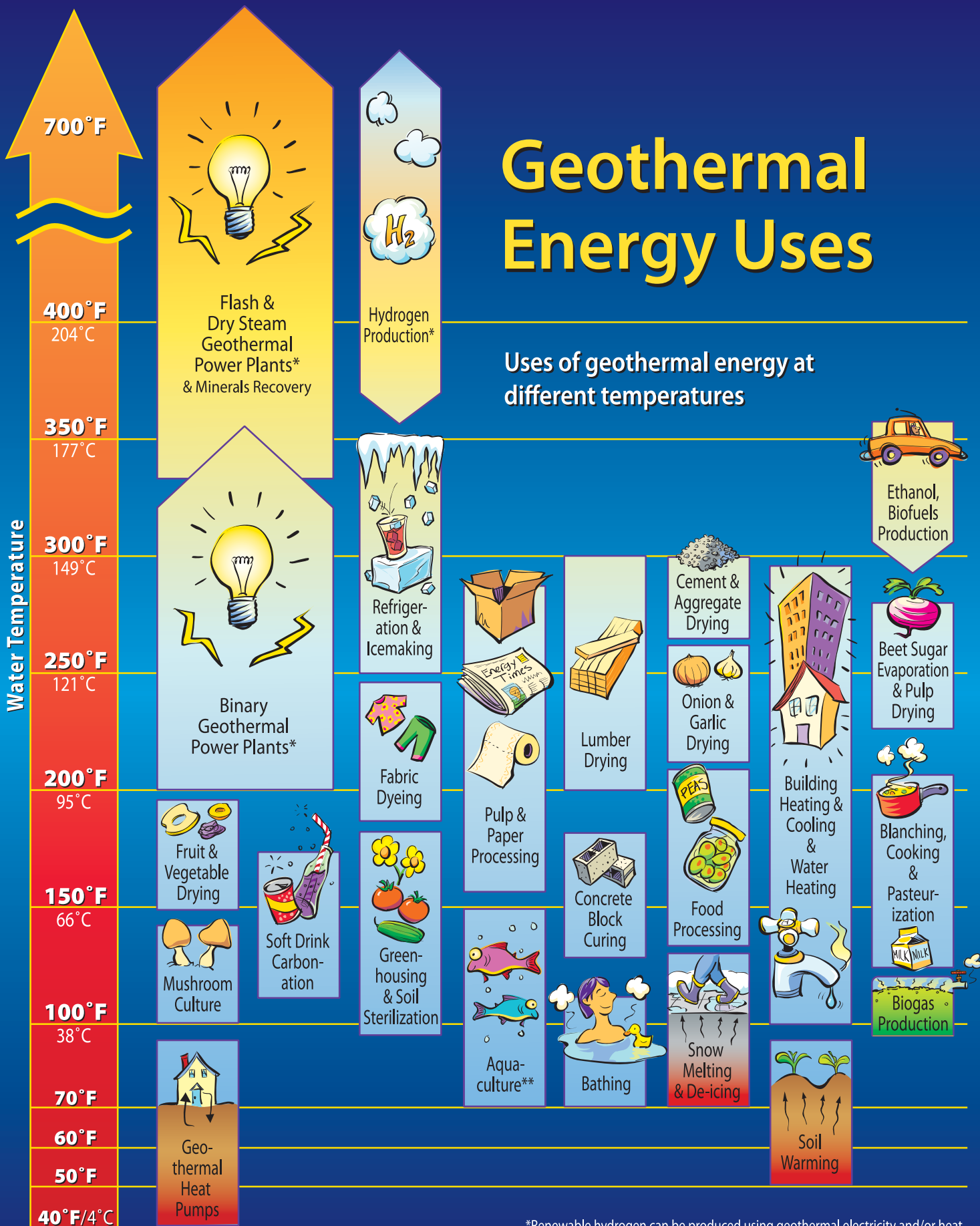
Learning Station 2: How is Geothermal Energy Used?

- Mounted poster – “Geothermal Energy Uses”
- Mounted poster with two figures – (1) Indirect use; (2) Direct use
- DVD – Virtual Power Plant Tour

This page intentionally left blank

Geothermal Energy Uses

Uses of geothermal energy at different temperatures



*Renewable hydrogen can be produced using geothermal electricity and/or heat.

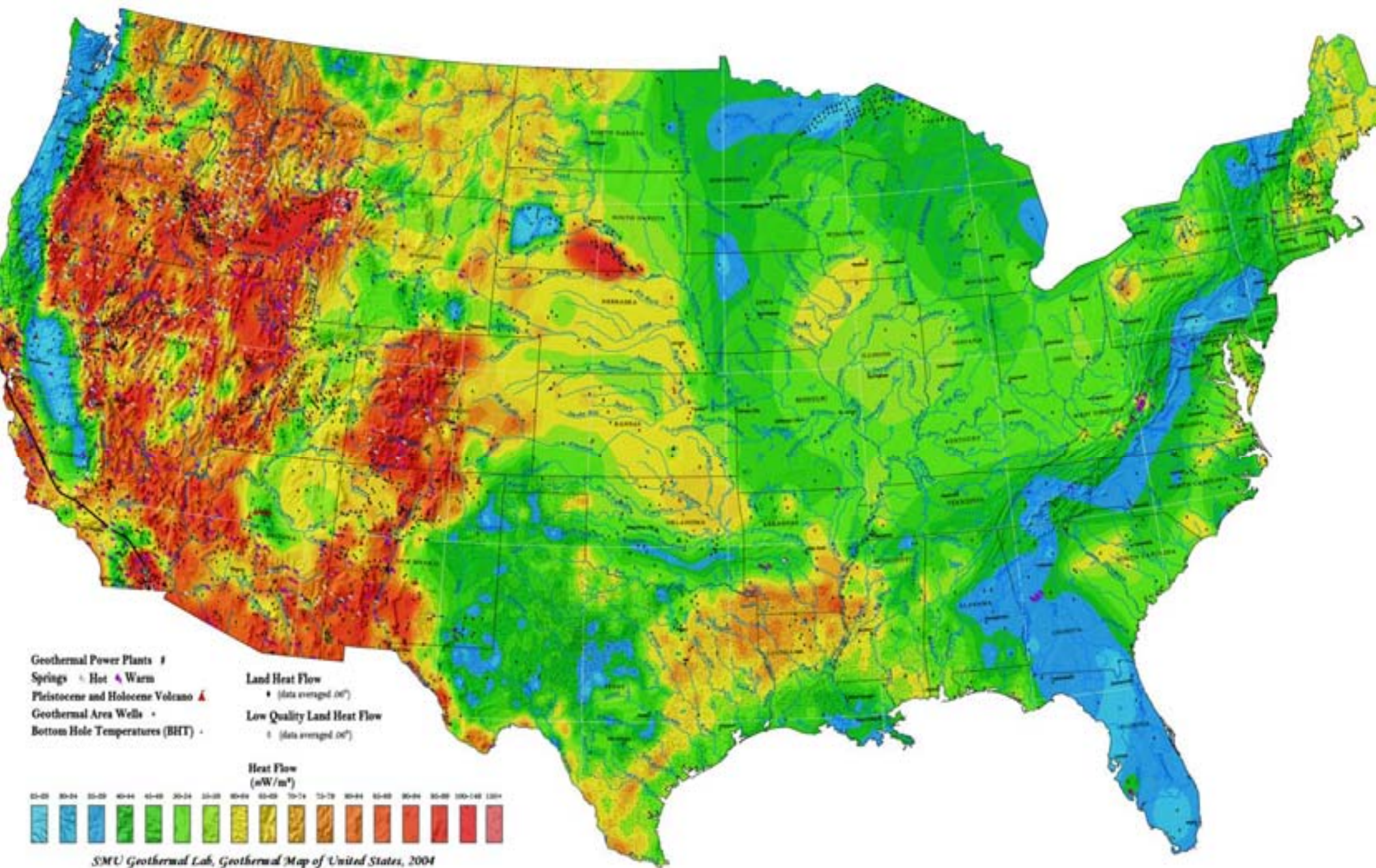
**Cool water is added as needed to make the temperature just right for the fish.

This page intentionally left blank

Learning Station 3: Where Are Geothermal Resources Located?

- Mounted poster – SMU Heatflow Map of the United States
- Clipped map - SMU Heatflow Map of North America
- Clipped map - State-specific INEL or other modern map of geothermal resources for the state we are in

This page intentionally left blank

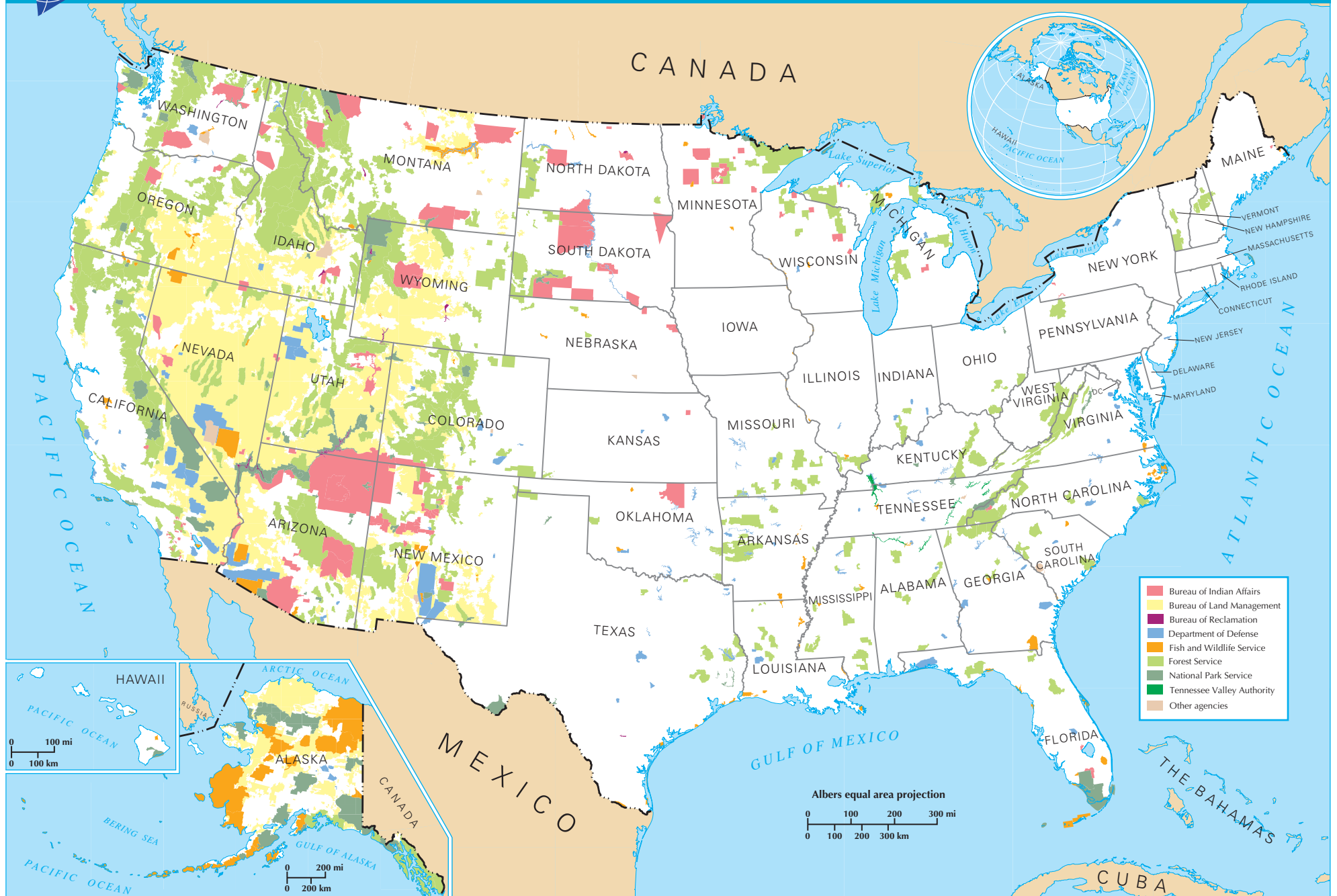


This page intentionally left blank

Learning Station 4: Where are BLM and FS Lands?

- Mounted Nationwide Land Status Map from NationalAtlas.gov
- Clipped map – State-specific land status map from NationalAtlas.gov

This page intentionally left blank



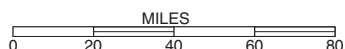
This page intentionally left blank



FEDERAL LANDS AND INDIAN RESERVATIONS



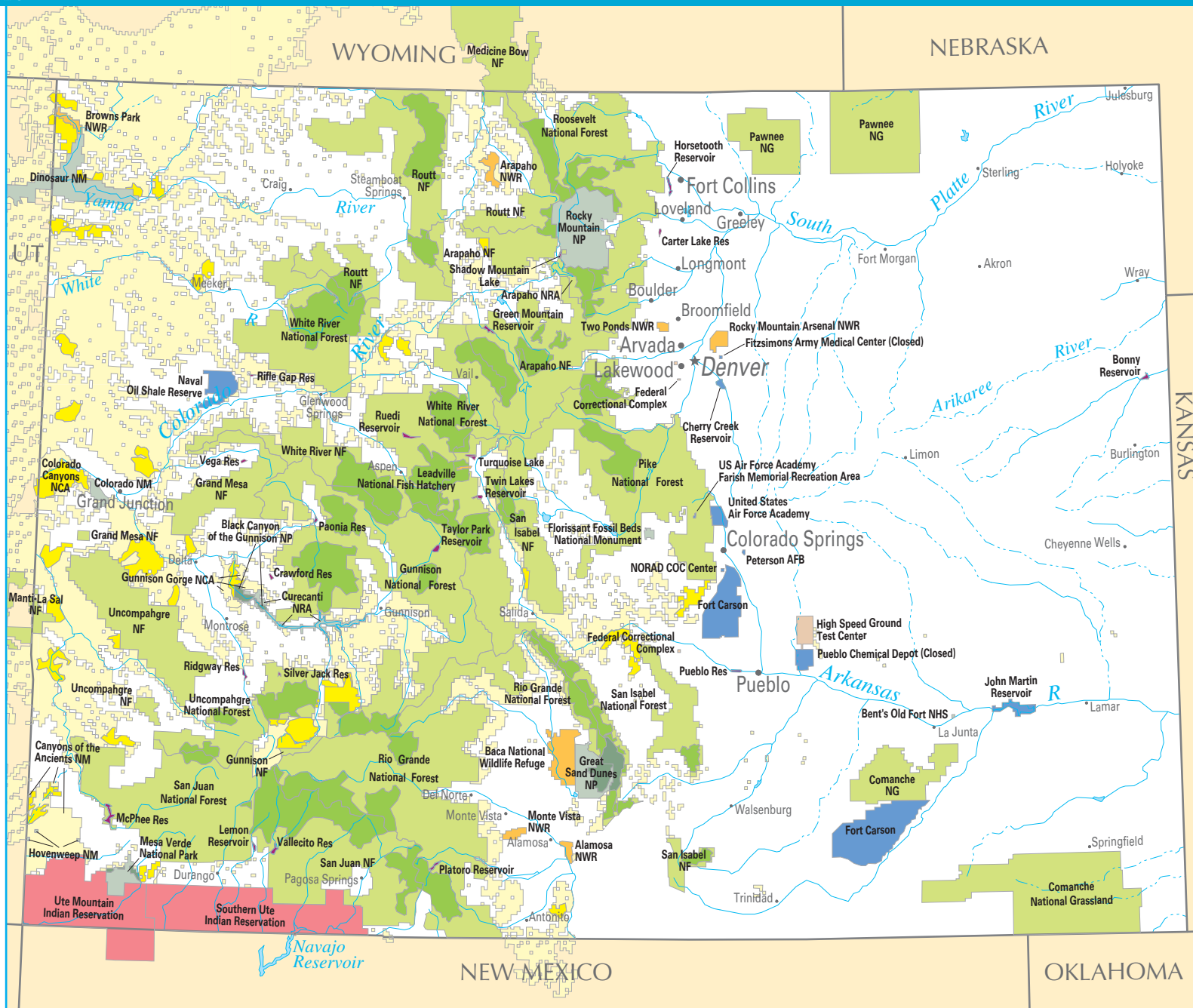
Some small sites are not shown, especially in urban areas.



Albers equal area projection

Abbreviations

AFB	Air Force Base
NCA	National Conservation Area
NF	National Forest
NG	National Grassland
NHS	National Historic Site
NM	National Monument
NP	National Park
NRA	National Recreation Area
NWR	National Wildlife Refuge
Res	Reservoir



This page intentionally left blank

APPENDIX E

List of Commentors

Below is a list of the seventy three (73) commentors who sent written submissions to the BLM and FS for the PEIS as part of the public scoping process. Name, affiliation, and date submitted are included. This list may be used to facilitate identification of a specific submission in Appendix F, Written Comment Summary Detail.

Name		Affiliation	Date Submitted
Associations and Organizations			
Karl	Gawell	Geothermal Energy Association	July 18, 2007
Alyssa	Kagel	Geothermal Energy Association	July 18, 2007
Brent	Schoradt	California Wilderness Coalition	July 25, 2007
Andrew	Whittome	Calpine Corporation	July 25, 2007
Craig	Kenworthy	Greater Yellowstone Coalition	August 13, 2007
Margaret	DeVault	Greater Yellowstone Coalition	August 8, 2007
John	Robison	Idaho Conservation League	August 10, 2007
Asante	Riverwind	Oregon Chapter Sierra Club	August 12, 2007
Janie	Painter	Save Medicine Lake Coalition	August 9, 2007
Kevin	Mueller	Utah Environmental Congress	August 10, 2007
Tom	Darin	Western Resource Advocates	August 13, 2007
Nada	Culver	The Wilderness Society	August 13, 2007
Heath	Nero	The Wilderness Society	August 13, 2007
Bruce	Pendery	Wyoming Outdoor Council	August 13, 2007
Consultants			
Anna	Carter	Geothermal Support Services	August 13, 2007
Federal and State Agencies			
Janell	Ward	New Mexico Department of Game and Fish	July 18, 2007
Nova	Blazej	United States Environmental Protection Agency	August 17, 2007
John	Harja	Utah, State of, Office of the Governor	August 13, 2007
John	Emmerich	Wyoming Game and Fish Department	August 9, 2007
Individuals			
Mark	Abney		August 12, 2007
Arlene	Abrams		August 8, 2007
Jorge	Andromidas		August 14, 2007
Anonymous	Anonymous		August 13, 2007
Dick	Artley		August 8, 2007
Ellen	Asprooth		August 8, 2007
Jeff	Balducci		August 8, 2007
Patti	Bell		August 8, 2007
Elaine	Bevilacqua		August 8, 2007
Patricia	Black		August 8, 2007
Wanda	Boland		August 8, 2007
Joan	Brownell		August 9, 2007
Kathleen	Callison		August 13, 2007
Mikki	Chalker		August 13, 2007
Jennifer	Clark		August 11, 2007
Ralph A.	Davis		June 27, 2007

Name		Affiliation	Date Submitted
Ruth	Davis		August 8, 2007
Andrea	DeHart		August 8, 2007
Darl	DeVault		August 8, 2007
Mailand	Edlin		August 9, 2007
Carole	Ehrhardt		August 8, 2007
Mark	Gordon		August 8, 2007
Natalie	Hanson		August 8, 2007
Rene	Houtrides		August 8, 2007
Linda	Karon		August 11, 2007
Richard	Karon		August 11, 2007
Don	Killian		August 9, 2007
Caroline	Kreide		August 10, 2007
Robert	Lout		August 9, 2007
Kim	Maddox		August 8, 2007
Jim	McCulloch		August 8, 2007
Kathleen	Menten		August 9, 2007
Gerard E.	Miller		August 8, 2007
Henry	Moore, Jr.		August 8, 2007
Carolyn	Mountain		August 8, 2007
Jean	Olmsted		August 9, 2007
Jonathan	Oppenheimer		August 13, 2007
Pat	Rayman		August 8, 2007
Robert	Rutkowski		August 8, 2007
Katherine	Schwirzinski		August 8, 2007
George	Siewerd		August 9, 2007
Dot	Sulock		August 13, 2007
Ryan	Talbott		August 8, 2007
Danielle	Thomas		August 9, 2007
Elaine	Thompson		August 9, 2007
Gabriella	Turek		August 10, 2007
Roberta	Whitby		August 8, 2007
James	Wilcox		August 8, 2007
Glenn	Williams		August 8, 2007
Joanne	Woodland		August 10, 2007
Bryan	Wyberg		August 8, 2007
Gary	Yandell		August 8, 2007
Linda	Yates		August 8, 2007
Jim	Zurn		August 8, 2007
Industry			
Andrew	Whittome	Calpine Corporation	July 25, 2007
Alex	Schreiner	Earth Systems Southwest	August 13, 2007
Dan	Schochet	Ormat, Inc.	July 17, 2007
Charlene	Wardlow	Ormat, Inc.	August 9, 2007
Dan	Fleischmann	Ormat, Inc.	August 13, 2007
Utilities			
Robert	Wittenberg, Jr.	Skamania County, Public Utility District No. 1	August 10, 2007

APPENDIX F

Written Comment Summary Detail

Most of the comments have been abbreviated from their original text, while some have been presented as written so as to preserve nuances of the authors that EMPS believed was important to effectively convey certain messages. The comments are organized by author. In some cases, multiple letters were submitted from the same organization, and these comments have been combined into a single group, even though the individual authors of that organization may vary. All letters from private individuals have been collated together, since some letters had one or zero comments pertinent to the PEIS. Where letters have been lumped together, explanations have been included to explain how this was done.

Associations and Organizations

California Wilderness Coalition

- It is crucial that agencies commit to avoiding sensitive areas in siting future geothermal leases on public lands.
- The PEIS should include a commitment not to permit geothermal projects in the following types of areas:
 - Wilderness Areas and Wilderness Study Areas;
 - National Parks and Preserves;
 - National Wildlife Refuges;
 - National Monuments and National Conservation Areas;
 - Other lands within the BLM's NLCS, such as Outstanding Natural Areas;
 - National Historic and National Scenic Trails;
 - National Wild, Scenic, and Recreational Rivers, study rivers and segments, and eligible rivers and segments;
 - Areas of Critical Environmental Concern;
 - FS Roadless Areas;
 - Threatened, endangered and sensitive species habitat, as well as critical cores and linkages for wildlife habitat;
 - Citizen Proposed Wilderness Areas; and
 - Other lands with wilderness characteristics.
- Some of the issues that should be studied, described and discussed for each alternative in the PEIS include:
 - The projected amounts and impacts of future geothermal energy leases;
 - The costs associated with allowing and maintaining geothermal leases;
 - The risks of reducing water quality;

- Impacts to air resources;
- Consequences of and for fire and fuels management;
- Impacts to the size of wild places given that there is a positive relationship between size of an area protected from human disturbance and maintenance of biodiversity;
- Impacts of development at various elevation distributions;
- Impacts to terrestrial animal habitat, including fragmentation and connectivity, edge effects, habitat suitability and effectiveness, early successional habitat, game species and late-successional habitat;
- Impacts to aquatic animal habitat and species, including fragmentation and connectivity, water hydrology and stream channel morphology, habitat complexity, water quality, pools, riparian vegetation, introduction of nonnative species and diseases and over-harvest and illegal introduction;
- Impacts to terrestrial and aquatic plant species, including non-native invasives, habitat fragmentation and effects of temporary roads;
- Impacts to threatened, endangered, proposed and sensitive species;
- Impacts to research, monitoring and reference landscapes;
- Consequences for non-mechanized, mechanized and motorized recreation;
- Impacts to scenic quality;
- Consequences to heritage resources;
- Impacts from development on lands adjacent to existing wilderness and other wild places;
- Impacts to viewsheds; and
- Impacts to outdoor recreation.

Calpine Corporation

- The PEIS should include an analysis of impacts from 'Enhanced Geothermal Systems' i.e. well stimulation methods including hydrofracing and acidizing.
- The PEIS should consider probable transmission line routes, together with access to existing lines or corridors.

Geothermal Energy Association

- The GEA supports the BLM and FS in developing the PEIS.
- The PEIS is crucial because (1) It will help address issues of global climate change by facilitating the development of more renewable energy projects; (2) It will help facilitate the development of clean energy that can meet our growing energy needs; (3) It fulfills NEPA's purposes; and (4) It should help reduce future delays in leasing and permitting of geothermal projects on the public lands.
- Geothermal energy is a clean, renewable resource that produces little to no air emissions and has minimal impacts on other environmental resources such as noise levels, geysers, fumaroles, wildlife and vegetation.

Greater Yellowstone Coalition

The Greater Yellowstone Coalition organized a letter writing campaign, resulting in the submittal of multiple copies of identical and nearly-identical copies of a comment letter. These letters included two written letters, 36 identical electronic mail letters, and four variations on the electronic mail letter, containing largely the same comments. This letter communicated the following points:

- Any activity that might interfere with the natural function of any geothermal feature or hydraulically linked aquifer in Yellowstone Park should be avoided. When current science and technology cannot provide absolute assurance regarding the effect of a proposed action on geothermal resources in Yellowstone Park, then that activity should be prohibited on Federal land and private lands with federal mineral rights.
- Use of geothermal resources as an energy source should not be pursued in areas where a hydrologic link with Yellowstone National Park geothermal features is possible. A permanent ban should be placed on all geothermal development on federal lands within a 15-mile radius of Yellowstone Park. The protected area should be expanded to fully incorporate the Island Park Geothermal Area (a minimum of 32 miles outside Yellowstone Park) and, in Montana, to follow the boundaries defined in the Yellowstone Compact.
- All drilling proposed to occur in Geothermal Resource Areas must be monitored and regulated to prevent irreversible secondary effects on geothermal systems.
- Prohibit geothermal leasing within Wild and Scenic River corridors, BLM Wilderness Study Areas, riparian areas, wetlands or other special habitat types on federal lands.
- Prohibit geothermal leasing on all FS lands designated as Roadless, Wilderness Study Areas, or Recommended Wilderness.
- All individual geothermal leasing applications should be evaluated on a case by case basis in compliance with the NEPA.

Idaho Conservation League and Utah Environmental Congress

- We support careful development of geothermal energy sources with the clear understanding that sensitive species and the wild and open spaces of the West need to be not only protected but also restored.
- Careful consideration must be given to the siting of geothermal power plants and of the related infrastructure to limit its environmental impacts. If not, unrestricted geothermal energy development has the potential to continue negatively impacting an environment already degraded by irresponsible energy development of the past decade. As a result of these activities, open spaces throughout the West have shrunk, sensitive species have declined, and wild places have been converted into industrial landscapes.
- Wilderness Study Areas (WSAs) should not be made available to geothermal leasing;
- Inventoried Roadless Areas on FS lands should not be made available to geothermal leasing.

- The leasing plan for FS lands should maintain a thriving natural ecological balance and multiple-use relationships. Multiple-use must not be replaced with the single use of energy development over immense stretches of the planning area, to the exclusion of most other uses of the land.
- The geothermal leasing document should provide for properly functioning condition for all wildlife habitats, including riparian habitats pursuant to BLM's Healthy Rangelands Initiative.
- The FS and BLM should not rely on seasonal stipulations to "protect" big game crucial ranges or migration corridors. These sensitive habitats should be placed off-limits to future surface disturbance through No Surface Occupancy stipulations or a prohibition of minerals leasing.
- Impacts to wintering big game are not limited to the construction phase of energy development, but continue at a significant level throughout the production phase. Stipulations that limit only construction and drilling activities do little to prevent the long-term disturbance and displacement of big game from their crucial winter ranges and calving areas. Thus, these seasonal stipulations are inadequate to prevent major impacts to big game populations on their crucial winter ranges.
- Sage grouse appear to be on the road to Endangered Species listing based on the increasing industrial development and habitat fragmentation of their core habitats, and the BLM's failure to respond through adaptive management to the increasing problems and require scientifically sound mitigation measures, particularly for energy development. According to Naugle et al. (2004), if we are to prevent sage-grouse from going extinct on their remaining range, we must find a way to provide high-quality habitats that support robust, genetically diverse populations capable of withstanding stochastic disease events. This includes the prevention of habitat loss, fragmentation, and degradation from energy development. Therefore, the geothermal leasing PEIS should provide strong protections for sage grouse as outlined by Connolly et al. (2000) and Braun (2006).
- The USFWS recently withdrew its proposal to list the mountain plover as Threatened under the Endangered Species Act, despite the fact that two separate status reviews by USFWS noted that this species continues to teeter on the brink of extinction. We remain deeply concerned about the continued viability of the mountain plover, particularly in light of the increased industrial development projected for its range. We believe that mountain plover nesting concentration areas must be protected from intensive development and from the heavy vehicle traffic that accompanies it. The PEIS should provide protections for this species, including no surface occupancy in mountain plover concentration areas. These areas must be mapped and presented in the PEIS in fulfillment of NEPA's baseline information requirements.
- This sensitive species has been petitioned for listing under the Endangered Species Act. The PEIS should disclose the location and estimated population size for northern leopard frog populations within the planning area, and provide protections for northern leopard frog habitats. These protections should include protections from the seepage of geothermal contaminants into the surface water.
- Braun et al. (1976) classified sage grouse, sage thrasher, sage sparrow, and Brewer's sparrow as sagebrush obligates, while green-tailed towhee and vesper sparrow were classified as near obligates. Sagebrush birds, and particularly sage thrashers, sage sparrows, and Brewer's sparrows, are sensitive to habitat fragmentation and degradation resulting from industrial development. A complete review of the impacts of geothermal development on sagebrush birds must be included in the PEIS.

- Raptor populations are on the rebound following declines based largely on insecticide spraying, predator poisoning programs, and shooting in the 1960s and 1970s. Raptors of special concern include the golden eagle, prairie falcon, northern goshawk, peregrine falcon, northern goshawk, ferruginous hawk, merlin, and burrowing owl. Most raptor species are sensitive to human disturbance in the form of foot or vehicle traffic during the nesting period, and in addition to assessing the impact of geothermal development on raptors in the PEIS, the FS and BLM should establish proactive measures that provide adequate buffers around nest sites and prevent the construction of developments (such as power plants and roads) that would lead to the future disturbance of nesting raptors.
- Geothermal development should employ available technologies that minimize damage to the environment. In areas where surface disturbance from drilling is appropriate (i.e., outside areas recommended for No Surface Occupancy, or “NSO” stipulations or withdrawal from leasing), directional drilling and other technologies should be employed in every case where they reduce the environmental impacts over conventional methods. Because clustering wells on a few isolated pads for full-field development or drilling horizontally from existing wellpads in infill situations results in a radical decrease in road, wellpad, and pipeline construction, directional drilling is likely to become the standard drilling procedure to balance energy development with ecosystem protection.
- Leasing plans under the PEIS need to ensure that each geothermal power plant is cost-effective. When not conflicting with other land uses, geothermal power plants should be constructed in areas where the generated power to cost ratio is maximized, guaranteeing that the most kilowatts will be produced with the least amount of environmental impact. This includes placing power plants in areas where the geothermal resources are ideal for energy development. In doing so, the size of the resource, its temperature, depth and permeability, as well as the chemistry of the geothermal fluid must be assessed to determine the development potential of the geothermal resources. In addition, the productivity of the wells, and the cost of constructing the associated infrastructure, including roads and transmission lines, will also determine the economic viability of a geothermal power plant. These factors must be considered prior to approving geothermal leases.
- Natural contaminants dissolved in extracted geothermal water pose potential threats to the environment. Geothermal water can contain a variety of compounds, including silica, sulfates, carbonates, and halides. And although efforts are made to keep geothermal fluids within a closed system, small amounts of these contaminants can be accidentally released into the surface environment. This is often the result of venting steam to eliminate excessive pressure or through mechanical breakdowns like broken pipes. The most common type of gaseous discharge is hydrogen sulfide, which smells like rotten eggs and can be toxic or fatal at high concentrations. In addition, acidic geothermal fluids can seep into the surface water, damaging aquatic ecosystems and contaminating drinking water supplies. The PEIS needs to take into account these potential threats, and develop measures to prevent the accidental discharge of toxic chemicals into the environment. This includes utilizing methods that limit the release of or filters gaseous discharge, as well as monitors the structural integrity of power plants.
- The forthcoming PEIS must examine direct and cumulative impacts resulting from reasonably foreseeable geothermal development resulting from leasing for the sensitive resources outlined below:
 - Surface and groundwater quality, quantity, and timing of flows;
 - Impacts to game and nongame fishes, both resident and anadromous;

- Impacts to sensitive amphibians;
 - Impacts to big game, including bighorn sheep, pronghorn, elk, mule deer, and moose;
 - Impacts to sage grouse and Columbian sharp-tailed grouse;
 - Impacts to prairie dogs;
 - Impacts to sagebrush obligate songbirds, including but not limited to Baird's sparrow, sage sparrow, Brewer's sparrow, green-tailed towhee, and sage thrasher;
 - Impacts to raptors, particularly ferruginous hawk, merlin, peregrine falcon, prairie falcon, burrowing owl, northern goshawk, and bald and golden eagle;
 - Impacts to other FS Sensitive Species, or Threatened, Endangered, or Candidate species;
 - Impacts to historical or cultural resources, including sited eligible for the National Register of Historic Places and Native American respected sites, and their settings (which encompasses the viewshed visible from the site);
 - Direct and indirect impacts to Research Natural Areas, Roadless Areas, Wilderness Study Areas, Wild and Scenic Rivers, and other specially designated conservation landscapes;
 - Impacts of forest and shrub steppe fragmentation;
 - Economic impacts (not just the positive economic impacts in terms of dollars produced, but also the economic costs of loss or degradation of public lands, wildlife habitats, quality of life, and infrastructure strains that accompany oil and gas development); the BLM's Economic Profile System should be used for this analysis;
 - Impacts to rare native plants and rare plant associations;
 - Impacts to steep, unstable, erodible, or saline soils;
 - Impacts related to noxious weed invasion or spread; and
 - Impacts to American marten and other interior forest species.
- The BLM should seek to first avoid any environmental degradation, then to minimize this degradation if unavoidable, and finally to mitigate irrecoverable environmental damage by habitat restoration in other areas if absolutely necessary.

Oregon Chapter, Sierra Club

- Interested and concerned citizens, state agencies and local governments, including members and staff of regional non-profit conservation organizations within the affected geographical scope of this proposed Geothermal PEIS, have received insufficient notice, and inadequate information to reasonably and meaningfully participate in this scoping process. An extension of the scoping time-period is necessary to provide for reasonable, informed, and meaningful participation of the public throughout the affected region.
- Federal and state agencies with management jurisdiction and oversight on potentially affected natural resources, including aquatic, terrestrial, avian, and botanical biodiverse ESA listed species and species of concern, must also be included and consulted throughout this geothermal PEIS process.

- The PEIS should consider the impacts of all activities and stages of geothermal exploration, development and operation, and should meet all requirements of NEPA and obligations of the BLM and FS.
- Federal Lands Policy and Management Act, NEPA, and federal judicial case law clearly hold that the concerns and issues regarding proposed projects cannot be broken into myopic, piecemeal segments. Interrelated issues and concerns regarding integral portions of proposed projects, including the exploration, test drilling, production, and power transmission are inextricably interconnected. As exploration and test drilling proposals would not exist in themselves without an underlying proposal to operate a geothermal plant, proposals and leases for test drilling and exploration must ultimately be contingent upon full assessment of issues and impacts related to full-scale geothermal production in the affected area, in addition to issues solely derived from exploration proposals.
- The PEIS should address subsurface minerals and energy resource claims that may have been filed in the proposed lease areas *[details provided in comment letter]*
- Regarding potential reclamation and restoration needs, in many locations there exist a poor track record of such reclamation ever occurring. Provisions in word alone, without adequate funding and enforcement mechanisms, have proven insufficient to accomplish essential reclamation (this is especially so for mining operations, however, we are aware of geothermal exploration well test sites that also have never been subject to reclamation). As reclamation of affected sites is required by federal environmental policy laws, the PEIS must develop provisions that include the financial and enforcement capabilities necessary to ensure this is effectively completed.
- As part of the responsibility entrusted in both BLM and the FS, by Congress and the public, to steward national forest public lands, it is requisite common sense that before the agencies would approve proposals, or sign contracts, they would first conduct research into the legality and environmental track records of business ventures and individuals seeking to operate on, or otherwise impact public lands resources. As the first responsibility of federal agencies is to the public's best interest on these lands, information from this research must be disclosed to the public (as is also required by federal policy laws). The PEIS must address this significant issue.

Save Medicine Lake Coalition

- The public needs to be heard, it is vital to have equitable public involvement; local public meetings must be held in the affected areas.
- Geothermal development is not the *silver bullet* for our nation's on-going energy crisis. It is a very expensive gamble with the odds waged against our treasured National Forests and public lands.
- Our National Forest's precious timber stands, clean air, pure waters, cultural sites and wildlife habitats cannot continue to be torn apart and put in harm's way by experimental or inexact geothermal technology.
- Geothermal technology must be drastically improved; our public lands and forests cannot continue to be geothermal industrial testing grounds. Public tax dollars and subsidies should be spent on tried and true renewable technology not hap-hazard geothermal development.

- Seismic monitoring must be done prior to and throughout a geothermal project's lifetime. The geothermal fluid injection is known to increase seismic activity. The new EIS's must address all known earthquake faults in the area of the proposed geothermal exploration and development.
- Mitigation and monitoring measures need to be in place to help off-set any private or public property damage, caused by geothermal induced seismic activity.
- Mitigation and monitoring measures also need to be in place to help improve the scientific understanding between fluid injection and seismicity.
- To ensure that air quality standards are maintained during all geothermal exploration and development phases, the developers must be required to have the drill rigs and the power plants regulated and monitored, via computer connections, to the state environmental protection agencies.

The Wilderness Society and Western Resource Advocates

- Because of the potential magnitude of impacts from geothermal development on the public lands and the uncertainty regarding how and when this development will occur, the PEIS should consider using a conditional-development lease stipulation.
- The agencies should specifically outline the environmental issues this PEIS will analyze in detail and include those issues identified below. Should the agencies decide not to analyze any of these issues in detail, please provide a detailed explanation of the grounds for not considering these important issues, including how a failure to analyze them is not a violation of the NEPA.
 - Socioeconomic and recreational impacts of development of the land tracts and their subsequent uses;
 - Impacts on protected, threatened, endangered, or sensitive species of animals or plants, or their critical habitats;
 - Impacts on floodplains and wetlands;
 - Impacts on archaeological, cultural, or historic resources;
 - Impacts on human health and safety;
 - Impacts on existing and future land uses;
 - Visual impacts; and
 - Disproportionately high and adverse impacts on minority and low-income populations, also known as environmental justice considerations.
- The PEIS must present data and analysis that fully accounts for negative impacts from habitat fragmentations, loss of quality of life, and loss of quality recreation that geothermal leasing and development might have on tourism, recreation and hunting and fishing.
- The PEIS socio-economic analysis must include an analysis of the income and jobs associated with recreation, hunting and fishing from each alternative.
- We request that your analysis of the geothermal energy leasing and development follow the approach set out in this document [*provided in comment letter*].

- For both the setting of cultural resources and the enjoyment of recreation opportunities, preserving the scenic values associated with these areas must be considered.
- The PEIS should acknowledge the likelihood of the presence of cultural resources and sacred sites in areas with geothermal energy potential and commit to both a Class III inventory and proactive consultation prior to leasing an area or permitting development.
- We recommend that the BLM and FS analyze the impact of geothermal energy leasing and development on wilderness quality lands and on wildlife habitat in general, through fragmentation of habitat; and that the agencies thoroughly address both the impacts and potential mitigation (including avoidance) in this PEIS.
- In the context of this PEIS, the agencies should look to the overall effect on the landscape of these contiguous eleven Western States and Alaska, and the many resources they contain.
- The PEIS impact analysis must encompass not only geothermal energy leasing and development, but also the cumulative impacts of this development, taken together with the impacts of existing, proposed, or reasonably foreseeable projects, on the environment. Thus, the agencies must analyze the cumulative impacts not just of geothermal energy leasing and development, but also of other projects that will impact resources in common with this proposed action. An insufficient cumulative impact analysis of actions within a larger region will render NEPA analysis insufficient.
- For purposes of the PEIS for geothermal leasing and development, if this document will be used to justify authorization of specific leases projects or take the place of later analysis based on the siting of specific projects, then this document must contain thorough site and use-specific analysis for each authorized lease or project. We recommend that the PEIS include definitive commitments to conduct site-specific NEPA analyses prior to offering geothermal energy leases and prior to approving projects.
- We recommend the agencies consider the following, environmentally preferable alternatives in detail:
 - Limit new geothermal energy projects to areas adjacent to existing power plants and transmission;
 - Do not authorize leasing or development in sensitive areas;
 - Limit the areas approved for new geothermal energy development based on the other values that may be affected and develop protective lease stipulations, such as seasonal timing limitations
- The agencies should define the scope of the Geothermal PEIS to include only traditional geothermal energy development, including dry steam and direct use processes, which is truly “renewable” and tie the scope of this PEIS to a definition of renewable energy similar to that provided above. Unproven, speculative “hot rock” technologies and other technologies that are not truly “renewable” should not be considered in this PEIS and should be specifically excluded.
- It is crucial that the agencies commit to avoiding sensitive areas, obtain necessary information on lands with wilderness characteristics and consider maximizing use of existing energy infrastructure (where appropriate) in identifying leasable lands and authorizing geothermal energy projects.

- The PEIS should include a commitment not to permit leasing or siting of geothermal energy projects in or immediately adjacent to the following types of areas:
 1. Wilderness Areas (identified in the Notice of Intent as an avoidance area);
 2. Wilderness Study Areas (WSAs);
 3. National Parks;
 4. National Wildlife Refuges;
 5. National Monuments;
 6. National Conservation Areas;
 7. Other lands within BLM's National Landscape Conservation System (NLCS), such as Outstanding Natural Areas;
 8. National Historic and National Scenic Trails;
 9. National Wild, Scenic, and Recreational Rivers, study rivers and segments, and eligible rivers and segments;
 10. Areas of Critical Environmental Concern;
 11. FS Roadless Areas;
 12. Threatened, endangered and sensitive species habitat, as well as critical cores and linkages for wildlife habitat;
 13. Citizen Proposed Wilderness Areas;
 14. Other lands with wilderness characteristics;
 15. Areas with important cultural and archaeological resources;
 16. Areas with endemic species;
 17. Areas with significant recreational use.
- We recommend that geothermal energy development not be sited immediately adjacent to these areas, particularly if doing so would degrade the viewshed or likewise invalidate an area's potential for designation as wilderness.
- It is critical that as this process move forward, the agencies provide the public with Geographical Information System (GIS) data of areas being considered for geothermal energy leasing and development. By providing GIS layers, those members of the public can effectively comment on the impacts of this PEIS on the areas they care about. It is likewise critically important that all maps throughout the PEIS process accurately identify all protected areas and areas with wilderness character so that members of the public without GIS capabilities fully understand the impacts of various management alternatives.
- Prior to identifying locations for geothermal leasing and development, the agencies should inventory the wilderness characteristics of these lands and exclude lands with wilderness characteristics from the lands available for leasing and development.
- The agencies should collect and use the following GIS data layers to map areas that are unacceptable for geothermal leasing and development to avoid impacting the identified areas:
 1. Designated Wilderness Areas (Available from FS, BLM, National Park Service (NPS), National Wildlife Refuges (NWRs));

2. Wilderness Study Areas (WSA) (Available from BLM and FS);
 3. National Parks (Available from NPS);
 4. National Wildlife Refuges (Available from US Fish and Wildlife Service);
 5. National Monuments (Available from NPS and BLM);
 6. National Conservation Areas (Available from BLM);
 7. Other lands within BLM's NLCS (Available from BLM);
 8. National Historic and National Scenic Trails (Available from BLM, FS, NPS);
 9. National Wild, Scenic, and Recreational Rivers, study rivers and segments, and eligible rivers and segments (Available from BLM, FS, NPS);
 10. Areas of Critical Environmental Concern (Available from BLM);
 11. FS Roadless Areas (Available from FS);
 12. Threatened, endangered and sensitive species habitat (available from the USFWS, state wildlife agencies and, for BLM lands, from NatureServe²³); critical cores and linkages for wildlife habitat (available from USFWS and state wildlife agencies); and
 13. Citizen Proposed Wilderness Areas.
- BLM and FS should include exclusion areas and mandatory best management practices.
 - The fragmentation that is likely to result from the increased geothermal energy development contemplated by the PEIS, as well as the foreseeable other uses of these areas (energy corridors, oil shale, vegetative treatments, etc.), could cause irreparable damage to wildlife habitat throughout these eleven Western states and Alaska. The agencies must commit to conducting a habitat fragmentation analysis before any parcels are leased for geothermal energy and before specific geothermal energy projects are approved. Further, the agencies must take steps to avoid or minimize habitat fragmentation and place these best management practices and stipulations in the PEIS.

Wyoming Outdoor Council

- Geothermal energy development should not be allowed to negatively affect important surface geothermal features, such as Old Faithful in Yellowstone National Park. Geothermal energy development adjacent to Yellowstone National Park could adversely affect the park's world-renowned geothermal features. Consequently, any development or even exploration for or assessment of geothermal resources in the Greater Yellowstone area must absolutely ensure that there are no impacts to geothermal resources in Yellowstone National Park or surrounding National Forests.
- The following should be kept in mind with respect to the Greater Yellowstone area:
 - Both the Bridger-Teton and Shoshone National Forests are engaged in a revision of their land use plans, and the geothermal energy EIS must be consistent with the direction in those revised plans.
 - There is massive oil and natural gas development occurring in the Greater Yellowstone area, particularly in southern portion of the area.

- There are a number of rare and/or sensitive species of wildlife that occur in this area that must be protected if geothermal energy were developed. These include the grizzly bear, gray wolf, Canada lynx, and the wolverine, which is being considered for listing under the Endangered Species Act.
- The large number of game population in this area, such as Rocky Mountain elk herds must be protected, especially due to their importance and value to sportsmen.
- Geothermal energy development on public lands should be done in a way that is compatible with other multiple use resource values, which may preclude geothermal development in instances where there would be conflicts with other important public resources, values, or assets.
- Appropriate safeguards should be in place to ensure that emissions of water, air and solid waste pollutants do not become a problem.
- Water and wastewater used or created at geothermal energy plants must be safely disposed of by re-injection into the ground so that surface waters are not contaminated, and provisions must be made to ensure that geothermal waters that are brought to the surface or which are re-injected do not contaminate groundwater, particularly drinking water supplies. Closed-loop systems appear to be clearly preferable in this regard than open-loop systems. Reinjection can also help extend the lifetime of geothermal resources and prevent subsidence of local lands.
- In making decisions regarding whether geothermal energy development is appropriate on at any given site, the totality of the energy production process should be considered. Thus, not only the wells and power plants must be considered; roads, power lines and other infrastructure must be considered as well.
- On private lands, geothermal energy development should comply with local planning and zoning laws, and be compatible with any special land use designations such as parks, recreation areas, or wildlife management areas.
- Because geothermal power plants can require large amounts of cooling water, it is important to ensure that wildlife, aquatic ecosystem, and recreational needs are met and maintained, and the needs of many other water users, such as farmers, must be considered as well, particularly in arid areas. For this reason, heated waters should not be disposed of into naturally cooler streams, and withdrawals of cooling water should not be allowed to de-water streams. Additionally, hot dry rock geothermal systems might not be appropriate on some western lands.
- Geothermal energy development should be greenhouse gas positive or neutral.
- Geothermal energy prospecting and development should be sensitive to the presence of thermophilic bacteria and other organisms. Microbiologic study of potential geothermal resources should be part of the scoping process, and steps should be taken to identify and protect organisms encountered.

Consultants

- The PEIS should clearly articulate the purposes served and the essential public benefits provided by development of geothermal resources on public lands.

- The USFS should undertake the more parcel specific resource baseline studies that will allow timely changes to the land and resource management plans (where appropriate) under follow-up NEPA reviews, tiered to the PEIS. Those baseline studies should start immediately.
- The PEIS should enact best management practices that reflect already long-known mitigation measures for reasonably anticipated impacts from geothermal exploration and development.
- Actions known not to cause significant impacts should be categorically excluded and all categorical exclusions used in timber, mining, oil and gas and other multiple-use activities should be applied to geothermal operations.
- The USFS and BLM should include Wilderness Study Areas in their assessment of regions with moderate to high potential for geothermal development and to take their findings to Congress.
- The NEPA document and process should not be integrated into state environmental review processes.

Federal and State Agencies

New Mexico Department of Game and Fish

- The PEIS should clarify the geographic scope of the project, and whether it will analyze impacts of geothermal leasing on non-Federally administered lands but where BLM holds subsurface rights.
- Pending lease applications may be better addressed in a separate volume of the PEIS since it may be difficult to include the site specific analyses in a single document of a programmatic nature.
- The cumulative analysis in the PEIS should address roads and power lines that would be needed to connect a project to the electric grid.
- The recent BLM geothermal leasing regulations contemplate the utilization of leases underlying adjacent non-federal jurisdictions. The NEPA analysis should include the effects of developing reasonably foreseeable units resulting from this process.
- Surface hydrothermal features in New Mexico provide crucial habitat for many species in arid environments. Any development plans should include a monitoring program that should include observation of surface features and tracer studies in addition to groundwater monitoring wells. It is recommended that each state or field office with one or more geothermal leases should have a technical advisory group for the purpose of reviewing and interpreting data. Mitigation measures should be identified for the various levels of potential impact.
- Drilling pits can trap wildlife, and where contaminated fluids are present, poison them. Standard stipulations should include provision of escape ramps for trapped wildlife, and netting over pits containing harmful substances to exclude birds and bats.
- Trenching for pipelines, conductors or other purposes should be minimized and backfilled as soon as possible.
- Trenching should generally be done during cooler months (October – March) to minimize impacts to wildlife, but should be assessed on a site-specific basis.

- For trenches left open overnight, escape routes should be constructed at least every 90 meters. Trenches that have been left open overnight should be inspected prior to backfilling, especially where endangered species are present.
- Standard stipulations should include designing transmission lines to prevent or minimize risk of electrocution of raptors...

United States Environmental Protection Agency

- The PEIS should describe and summarize the key studies and information to identify the areas with moderate to high potential for geothermal development.
- The PEIS should identify environmentally sensitive areas and areas with potential use conflicts.
- The PEIS should address at a general level the potential impacts due to the associated infrastructure required for exploration and development.
- The PEIS should identify areas with established transmission lines, areas where there is a lack of available transmission capacity, areas where new transmission lines have been proposed in conjunction with other projects, and areas that should be designated transmission corridors in scenic areas.
- The PEIS should clearly describe each phase of geothermal resource development and the associated activities of each phase.
- The PEIS should provide a thorough environmental review process based on the requirements of NEPA.
- Federal and State laws pertaining to the project should be outlined in the PEIS.
- All current and past geothermal legislation should be summarized in the PEIS.
- The procedure used for distributing royalties should be outlined in the PEIS.
- State Renewable Portfolio Standards should be described in all states included in the analysis of the PEIS.
- Any signed power sales agreements that are associated with federal, state, or private lands that are located in the vicinity of an identified geothermal leasing area should be disclosed in the PEIS as part of the cumulative analysis.
- The PEIS should contain a clear and concise purpose and need. The PEIS should discuss the proposed project in the context of the larger energy market. It should identify the potential builders of power plants and purchasers of the power produced, and clearly describe how the need for the power had been determined. The PEIS should also discuss on-going and planned energy conservation programs undertaken by power distributors and how energy conservation may affect the need for this project.
- A complete impact analysis should be included in the PEIS. This should include analysis of water resources, biological resources, and air quality impacts, and environmental justice.

- The PEIS should describe the process and outcome for government-to-government consultation between the BLM, the USFS, and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternatives.
- The PEIS should consider how climate change could potentially influence the proposed project, and it should quantify and disclose greenhouse gas emissions from the project.
- The PEIS should evaluate all reasonable alternatives that fulfill the purpose of the project's purpose and need.
- The document should identify and discuss indirect and cumulative impacts that are associated with the project.

Utah Office of the Governor, Utah Geological Survey

- The PEIS process should include analyses of areas and sites with geothermal power generation plus geothermal direct-use potential. Because of emerging technologies, geothermal sites previously not considered for electric power potential may, in the near future, be developed for power generation.
- The following identified geothermal resource sites within the Sevier thermal area of central and southwestern Utah (identified in the accompanying text and on the accompanying map) should be considered within the context of the BLM-USFS PEIS:
 - Cove Fort-Sulphurdale Geothermal Area
 - Roosevelt Hot Springs
 - Thermo Hot Springs
 - Newcastle-SE Escalante Desert
 - Monroe-Red Hill
 - Joseph Hot Spring:
 - The Meadow-Hatton Geothermal Area
 - Crater Springs Geothermal Area
 - The Drum Mountains-Whirlwind Valley
 - The west side of the Black Rock Desert in Millard County

Wyoming Game and Fish Department

- Although relatively minor in comparison to other energy infrastructure, there are impacts associated with geothermal energy development that should be disclosed and addressed in the EIS. These include surface and habitat disturbance from plant construction, additional road construction and use, and power line impacts. Surface disturbance of key habitats can cause significant impacts to habitat use and wildlife populations. Roads fragment habitat, the associated traffic will increase wildlife mortality, and fences associated with roads may severely affect populations by blocking big game migration corridors. Power lines, if improperly sited and designed, can cause significant bird mortality, including sensitive species in some areas.

- The EIS should disclose the uncertainty of the impacts a geothermal plant may have on water resources in the Yellowstone area. To the extent possible, the EIS should analyze the hydrologic connectivity of these resources to the geysers in the Park, and address potential decreases in surface waters and associated habitats.
- A map has been provided identifying big game crucial winter ranges and parturition areas, and sage grouse leks. These areas should be avoided or mitigated in consultation with our agency.

Industry

Calpine Corporation

- Include 'Enhanced Geothermal Systems' i.e. well stimulation methods including hydrofracing and acidizing. (These are being used by opposition groups to delay the Glass Mountain project).
- Included probable transmission line routes, together with access to existing lines or corridors.

Ormat Inc.

Three letters were received from Ormat, Inc. The company develops and operates geothermal power plants and equipment. Ormat provided a list of individual prospects and geographic regions which it identified as having a high potential for future geothermal resource development. A total of 69 total prospects or prospect areas were provided. These prospects have been categorized as (1) prospects where Ormat indicates they could begin the development process shortly after leases are available; (2) prospects with a high probability for near-term development; and (3) prospects with a good potential for future development. Additionally, Ormat provided the following comments directly related to the PEIS:

- Ormat supports the BLM/FS effort.
- The PEIS should analyze exploration impacts. It is common in the industry to drill exploration wells that are flow tested for a few hours to days to determine the viability of the resource and collect brine samples to analyze the water chemistry. An exploration plan usually calls for the drilling of several wells around a potential resource area to try and define a resource prior to submitting plans for utilization. The number of wells that are needed is dependent on the size of the resource and the success of each well drilled. The fluids will either be injected back into the well from which they were produced or injected into another well if available. A third well can provide for downhole pressure and temperature monitoring during this flow test. Potential drilling impacts and mitigation, whether for exploration or utilization, are the same except for site specific concerns such as biological or cultural resources.
- The PEIS should analyze at least three well pads for each of the resources considered. The effects of well drilling and testing are well known. The analysis of exploration drilling should be included and covered in the PEIS such that the lessee would only need to conduct site-specific cultural and season-appropriate biological surveys and implement standard mitigation measures in order to construct the well pad and drill and test the wells.
- The PEIS should analyze geothermal development, including the drilling and testing of wells. Drilling wells for development once the exploration wells have confirmed the resource is no

different than the impacts from exploration drilling. The potential impacts may actually be less because each well defines the resource better and drilling techniques for that resource are better defined. Actually, the more that is known from drilling the better the power plant can be designed and the well field defined. These are all important parameters that will be needed for the NEPA document for utilization. Often changes have to be made after a project is submitted because this information is not available. The agencies and the public will be better informed with this approach and a better analysis can be performed on the proposed utilization project.

- The PEIS should be compliant with the California Environmental Quality Act (CEQA) and should identify the CEQA lead agency. Exploration activities including temperature gradient wells and exploration wells often require a permit from an agency such as a local air pollution control district. However, such a district would be required to prepare a CEQA analysis of the potential impacts prior to issuance of a permit. The PEIS could incorporate the few differences required to make the document CEQA compliant or very close allowing the California agencies to utilize it for their analysis. This is currently being done on the leasing EIS for the Truckhaven prospect in the Imperial Valley of Southern California in conjunction with the California State Lands Commission. Additionally, multiple joint EIS/Environmental Impact Reports (EIRs) have been done for geothermal projects in California and memorandums of understanding exist between the BLM/USFS and state agencies for other projects. We suggest that the California Air Resources Board or the State Lands Commission serve as the CEQA lead agency for the project. The typical mitigation measures (e.g., watering for dust control, use of a cyclone muffler, hydrogen sulfide testing and control) could be included in the EIS/EIR to ensure that no significant impacts to air occur as a result of drilling.
- The PEIS should define how a local BLM field office may be able to continue to prepare an independent NEPA analysis outside of the PEIS should they desire to prepare their own NEPA leasing document to expedite a project.
- The PEIS should recognize that expanding geothermal energy use would have numerous important long term benefits, including:
 - Reducing regional air emissions;
 - Improving US national security by expanding indigenous energy supplies;
 - Promoting long term energy sustainability;
 - Providing urgently needed baseload power in areas with high population growth;
 - Creating new jobs and rural economic development; and
 - Providing income to state and local governments.

Utilities

Skamania County PUD

The BLM should include Skamania County, Washington in its areas for evaluation in the geothermal leasing Programmatic EIS, as this area clearly meets the criteria of “reasonable near-term exploration development potential,” as demonstrated by a report prepared for the Bonneville Power Administration (BPA) in 1992, *Economic Impacts of Geothermal Development in Skamania County, Washington*

Comments by Individuals

Eighteen (18) unique comment letters were submitted by private individuals. The following is a compilation of the comments received:

- Some comments identified specific areas to be analyzed in the PEIS.
- There must be no geothermal development anywhere near Yellowstone National Park with even a remote possibility to tap the geothermal system feeding Yellowstone, either now or in the future should an earthquake modify the system.
- A new efficient rotary engine for producing electricity from thermal steam sites has been developed. Will the PEIS consider the use of these in its analysis? See www.hometown.aol.com/ecomotors
- The BLM and FS should be cautious in allowing development of lands nearby National Parks. As has been seen with the demise of the Colorado River, the cumulative impacts of piece-meal development over time ends up destroying ecosystems and degrading the quality of remaining national treasures.
- The PEIS should provide clear direction to land management agencies to avoid impacts to backcountry hot springs.
- Impacts to roadless and wilderness areas should be minimized.
- Negative impacts to habitat for Threatened, Endangered and sensitive species should also be avoided.
- Development of roads and other transmission corridors should consider water quality, scenic, and wildlife resources.
- Consideration must be given to protection for outstanding historic, recreational and biological resources that might be impacted. The PEIS should consider these impacts and should develop alternatives that would protect each of these resources.
- Given the specificity of NEPA and unique and unpredictable local interests the PEIS goal is neither achievable nor compatible with the NEPA guidelines.
- The PEIS should standardize certain common elements to save time and effort in its preparation. Having a set of industry-accepted and BLM-approved criteria for the following items would also assist each local BLM office in what is expected during geothermal exploration and development activities. Some of the aspects are:
 - Surface Exploration Activities: The BLM should have a consistent list of procedures and expected surface impact for the major geophysical, geochemical and geological geothermal exploration work, including surface mapping, spring and gas sampling, geologic mapping in remote terrain (where 4x4 units may be needed), and geophysical techniques such as gravity, passive and active seismic, various electrical methods, and magnetic surveys.
 - Subsurface Exploration Activities: A variety of types of geothermal exploration wells can be drilled. Each uses a different type of rig, different casing designs, completion

techniques, depth range of completion, surface footprint, and time to complete. The BLM should consider groundwater observation wells, shallow (1500 feet deep) rotary drilled gradient holes; core drilled wells (generally >1,000 feet to <4,000 feet deep), deep exploration slim holes that can be tested (generally rotary drilled and >2,000 feet deep); and deep full-sized exploration wells (generally >3,000 feet deep).

- Development infrastructures, including the expected footprint for different power plant designs and sizes, the number of well pads and miles of roads per project, number and size of pipelines, impact of transmission lines, etc. These numbers can be tailored by the quality of the resource (steam vs. high temperature water vs. low temperature water) and by the technology involved (steam vs. flash vs. binary vs. direct use).
 - Development wells, including a standard casing design and depth range for the type of well (production, injection and groundwater/reservoir observation) for each power plant design.
 - Power Plant Design: Each of the different power technologies (steam, flash or binary) has several typical standard plant sizes and thus footprints. Each plant technology has its own regularly expected staffing needs, hazardous chemicals on site and water utility needs. Each power plant design has a different expected impact on the environment, though this is more variable depending on the quality of the resource.
- The area around the geysers at Yellowstone National Park is due for a volcanic eruption. Geothermal exploration in that area could trigger such an eruption.
 - Geothermal leasing should not take place on public lands. Public lands are for the people, not for corporate development interests.
 - If drilling occurs in any Geothermal Resource Area it should be carefully monitored and regulated to prevent irreversible secondary effects on the geothermal systems. There are whole geothermal systems destroyed or in danger of destruction (in the US and elsewhere) due to careless drilling.
 - The fast-track approach to “expedite the leasing” of these public lands is disturbing. These are irreversible decisions being made for generations of US citizens. There should be no “expediting” of anything that can do such long-term damage to the resource. Each individual geothermal leasing application should be evaluated carefully on a case-by-case basis in full compliance with the NEPA.
 - The BLM should include Skamania County, Washington as well as Yakima County and Whatcom County, Washington for evaluation in the PEIS.
 - With respect to the PEIS, the following information should be included:
 - Description of the area extent and specific locations of high temperature and low temperature resources.
 - Likely developable energy supply, given information about the resources available for development.
 - Geologic assessment, concluding exploratory drilling and testing as appropriate, to assess the impact of geothermal production and return flow injection, if any, on the sustainability of the geothermal reservoir.

- Assessment of the hydraulic gradient of geothermal resources and the impact of geothermal production and return flow injection, if any, on surface waters and other sensitive areas.
- Assessment of potential thermal impacts on local resources.
- Traffic impacts and other impacts to local infrastructure from site development and operation.
- Impacts on the regional power grid, and a needs assessment.
- Potential cultural sites and issues.
- Regulatory and policy obstacles at the federal level that impact development, and recommendations to address them.
- Beneficial effects of development on local and regional economies.